

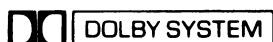
Service Manual

Cassette Deck

RS-M88

(Black Face)
(Silver Face)

Quartz-Locked Direct-Drive Cassette Deck
with Metal Tape Recording Capability



This is the Service Manual for the following areas.

☐ ... For All European areas except United Kingdom.

☒ ... For United Kingdom.



Professional Series

RS-M85 MECHANISM SERIES

Specifications

Track system:	4-track 2-channel stereo recording and playback	Outputs:	LINE; output level 700 mV, load impedance 22 k Ω over
Tape speed:	4.8 cm/s		HEADPHONE; output level 140 mV, load impedance 8 Ω
Wow and flutter:	0.035% (WRMS), $\pm 0.10\%$ (DIN)	Rec/PB connection:	5 P DIN type; input sensitivity 0.25 mV, impedance 4 k Ω
Frequency response: Metal tape;	20 — 20,000 Hz		output level 700 mV, impedance 1.5 k Ω
	30 — 18,000 Hz (DIN)	Bias frequency:	85 kHz
	30 — 17,000 Hz ± 3 dB	Motors:	2-motor system
(0 VU)	40 — 13,000 Hz ± 3 dB		Capstan; 1-quartz control phase-locked DC brushless direct-drive motor
CrO ₂ /Fe-Cr tape;	20 — 18,000 Hz		Reel table; 1-DC coreless motor
	30 — 18,000 Hz (DIN)	Heads:	2-head system
	30 — 16,000 Hz ± 3 dB		1-SX (Sendust Extra) head for rec/playback
Normal tape;	20 — 16,000 Hz		1-sendust/ferrite double-gap head for erasure
	30 — 16,000 Hz (DIN)	Power requirements:	AC; 110/125/220/240 V, 50-60 Hz
	30 — 14,000 Hz ± 3 dB		Preset power voltage; 240 V only for England.
Signal-to-noise ratio: Dolby [*] NR in; 69 dB (above 5 kHz)		Power consumption:	35 W
Dolby NR out; 59 dB (signal level = max. recording level, Fe-Cr/CrO ₂ type tape)		Dimensions:	9.7 cm(H) \times 45.0 cm(W) \times 40.3 cm(D)
Fast forward and		Weight:	10.5 kg
rewind time: Approx. 80 seconds with C-60 cassette tape			
Inputs:	MIC; sensitivity 0.25 mV, applicable microphone impedance 400 Ω — 10 k Ω		
	LINE; sensitivity 60 mV, input impedance 68 k Ω		

Specifications are subject to change without notice.

* 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories.

Technics

Matsushita Electric Trading Co., Ltd.

P.O. Box 288, Central Osaka Japan

LOCATION OF CONTROLS AND COMPONENTS

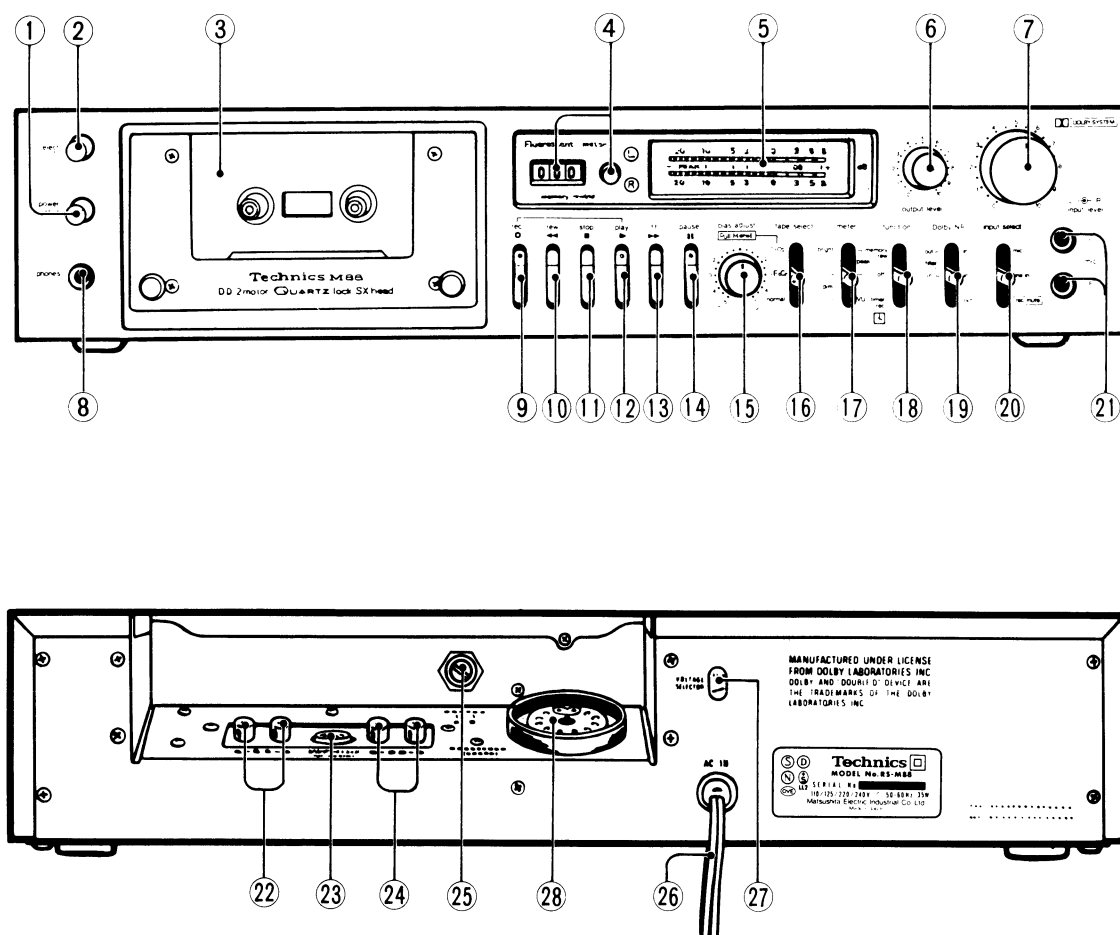


Fig. 1

- | | | |
|--|--|---|
| ① Power Switch (power) | ⑩ Rewind Button (rewind) (◀◀) | ⑬ Tape Selector (tape select) |
| ② Eject Button (eject) | ⑪ Stop Button (stop) (■) | ⑭ Meter-Brightness/Function Selector (meter) |
| ③ Cassette Holder | ⑫ Playback Button with Playback Indication Lamp (play) (▶▶) | ⑮ Function Selector (function) |
| ④ Tape Counter, Reset Button | ⑬ Fast-Forward Button (ff) (▶▶▶) | ⑯ Dolby Noise-Reduction Switch (Dolby NR) |
| ⑤ FL (Fluorescent Level) Meters | ⑭ Pause Button with Pause Indication Lamp (pause) () | ⑰ Input Selector (input select) |
| ⑥ Output Level Control (output level) | ⑮ Bias-Adjustment Control/"Metal tape" selector (bias adjust) (pull Metal) | ⑱ Microphone Jacks (mic) |
| ⑦ Input Level Controls (input level) | | ⑲ Line Output Jacks (LINE OUT) (R, L) |
| ⑧ Headphones Jack (phones) | | ⑳ Record/Playback Connection Socket (REC/PB) |
| ⑨ Record Button with Record Indication Lamp (record) (○) | | ㉑ Line Input Jacks (LINE IN) (R, L) |
| | | ㉒ Meter-Brightness-Adjustment Control (meter light) |
| | | ㉓ Power Cord |
| | | ㉔ Voltage Selector (VOLTAGE SELECTOR) |
| | | ㉕ Remote-Control Connector (REMOTE CONTROL) |

DISASSEMBLY INSTRUCTIONS

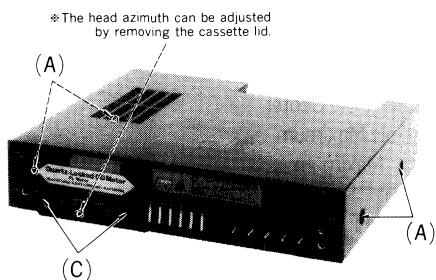


Fig. 2

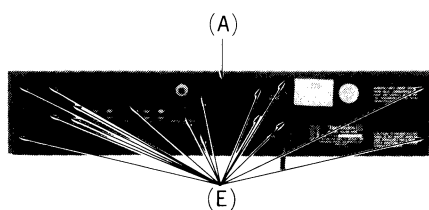


Fig. 3

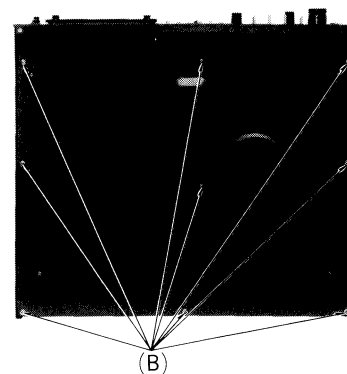


Fig. 4

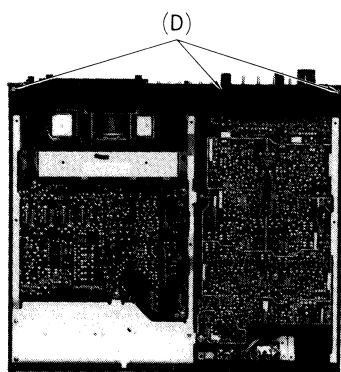


Fig. 5

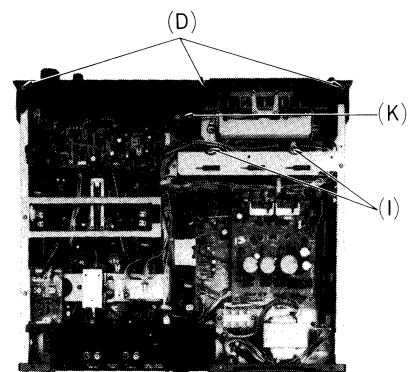


Fig. 6

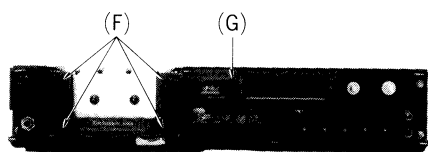


Fig. 7

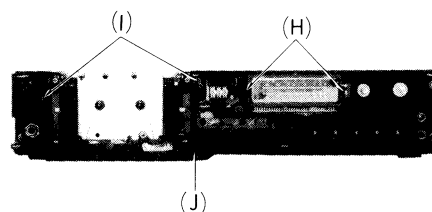


Fig. 8

Procedure	To remove ———	Remove ———	Shown in fig. ———
1	Case cover	• 5 black screws(A)	2, 3
2	Bottom cover	• 9 screws(B)	4
3	Front panel	• 2 cassette lid holding screws(C) • 6 red screws(D)	2 5, 6
4	Back cover	• 16 black screws(E)	3
5	Cassette holder	• 4 screws(F)	7
5	FL level meter	• Meter cover(G) • 2 meter holders.....(H)	7 8
5	Mechanism	• 4 red screws(I) • 1 black screw(J) • Tape counter belt.....(K)	6, 8 8 6

DISASSEMBLY INSTRUCTIONS

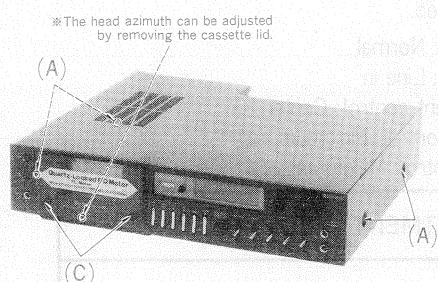


Fig. 2

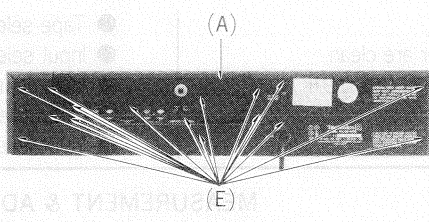


Fig. 3

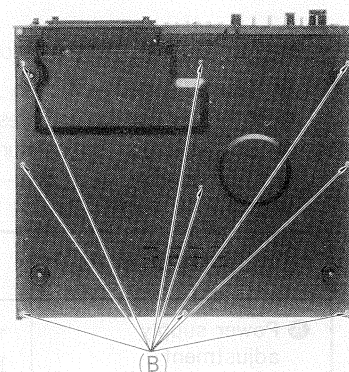


Fig. 4

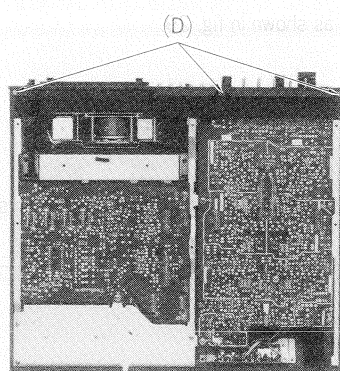


Fig. 5

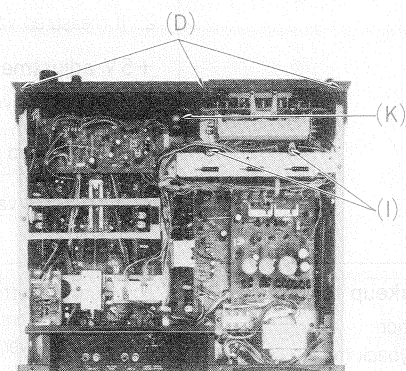


Fig. 6

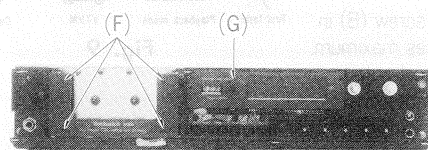


Fig. 7

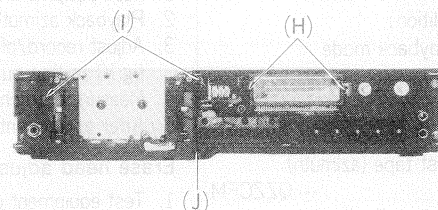


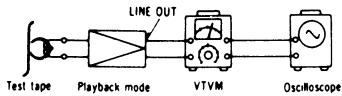
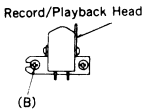
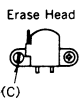
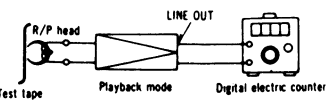
Fig. 8

Procedure	To remove	Remove	Shown in fig.
1	Case cover	• 5 black screws (A)	2, 3
2	Bottom cover	• 9 screws (B)	4
3	Front panel	• 2 cassette lid holding screws (C) • 6 red screws (D)	2 5, 6
4	Back cover	• 16 black screws (E)	3
5	Cassette holder	• 4 screws (F)	7
5	FL level meter	• Meter cover (G) • 2 meter holders (H)	7 8
5	Mechanism	• 4 red screws (I) • 1 black screw (J) • Tape counter belt (K)	6, 8 8 6

MEASUREMENT AND ADJUSTMENT METHODS

NOTE: Set lever switches and controls in the following positions, unless otherwise specified.

- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature: $20 \pm 5^{\circ}\text{C}$ ($68 \pm 9^{\circ}\text{F}$)
- Meter selector: Peak, dim
- Dolby NR switch: OUT
- Tape selector: Normal
- Input selector: Line in
- Bias adjustment control: Center
- Output level control: Maximum
- Input level control: Maximum

ITEM	MEASUREMENT & ADJUSTMENT
A Power supply adjustment	<p>+20V adjustment</p> <ol style="list-style-type: none"> 1. Connect voltmeter to the test point 11 on the power circuit board and read voltage. <div style="border: 1px solid black; padding: 2px; text-align: center;">Standard value: $+20 \pm 0.5\text{V}$</div> <ol style="list-style-type: none"> 2. If measured value is not in standard, adjust VR401 as shown in fig. 29. <p>+5V adjustment</p> <ol style="list-style-type: none"> 1. Connect DC voltmeter to the test point 12 on the power circuit board and read voltage. <div style="border: 1px solid black; padding: 2px; text-align: center;">Standard value: $+5 \pm 0.4\text{V}$</div> <ol style="list-style-type: none"> 2. If measured value is not in standard, connect the point A on the power circuit board as shown on page 14.
B Takeup tension Condition: * Playback mode Equipment: * Cassette torque meter (QZZSRKCT)	<ol style="list-style-type: none"> 1. Mount cassette torque meter on UNIT. 2. Place UNIT into playback mode and read takeup torque. 3. Measure several times and determine the mean value. <div style="border: 1px solid black; padding: 2px; text-align: center;">Standard value: $34 \pm 6\text{ gr-cm}$</div> <ol style="list-style-type: none"> 4. If measured value is not in standard, adjust VR601.
C Head azimuth adjustment Condition: * Playback mode Equipment: * VTVM * Oscilloscope * Test tape (azimuth) ... QZZCFM * Tape path viewer ... QZZCRD	<p>Record/playback head adjustment</p> <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 9. 2. Playback azimuth tape (QZZCFM 8kHz). 3. Adjust record/playback head angle adjustment screw (B) in fig.10 so that output level at LINE OUT becomes maximum. 4. Measure both channels, and adjust levels for equal output. 5. After adjustment lock head adjustment screw with lacquer. <p>Erase head adjustment</p> <ol style="list-style-type: none"> 1. Test equipment connection is the same above but use the tape path viewer (QZZCRD) instead of test tape (QZZCFM). 2. Playback this tape. 3. Adjust screw (C) shown in fig. 11 so that the tape may not get curled or malformed by tape guide of the erase head. 4. After adjustment, lock head adjust screw with lacquer. <div style="text-align: center;">  <p>Fig. 9</p> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Fig. 10</p> </div> <div style="text-align: center;">  <p>Fig. 11</p> </div> </div>
D Tape speed Condition: * Playback mode Equipment: * Digital electronic counter * Test tape ... QZZCWAT	<p>Tape speed accuracy</p> <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 12. 2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to frequency counter. 3. Measure this frequency. 4. On the basis of 3,000Hz, determine value by following formula: $\text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100 (\%)$ <p style="text-align: center;">where, f = measured value</p> <ol style="list-style-type: none"> 5. Take measurement at middle section of tape. <div style="border: 1px solid black; padding: 2px; text-align: center;">Standard value: $\pm 0.4\%$</div> <div style="text-align: center;">  <p>Fig. 12</p> </div>

ITEM	MEASUREMENT & ADJUSTMENT
	<p>Tape speed fluctuation</p> <p>Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows:</p> $\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3,000} \times 100 (\%)$ <p>f_1 = maximum value, f_2 = minimum value</p> <p>Standard value: Less than 0.3%</p>
<p>Ⓔ Capstan motor circuit adjustment</p> <p>Condition:</p> <ul style="list-style-type: none"> * Playback mode <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * Oscilloscope 	<p>A. Standard DC power supply voltage adjustment</p> <ol style="list-style-type: none"> 1. Measure the DC voltage between central point of VR703 and ⑥ terminal of IC702 as shown in fig.13. <p>Standard voltage: $0 \pm 0.05 \text{ V}$</p> <ol style="list-style-type: none"> 2. If measured voltage is not within standard, adjust VR703. <p>B. Phase lock point adjustment</p> <ol style="list-style-type: none"> 1. Measure the DC voltage between ④ terminal of IC702 and ground as shown in fig. 14. <p>Standard voltage: $5.2 \pm 0.1 \text{ V}$</p> <ol style="list-style-type: none"> 2. If measured voltage is not within standard, adjust VR702. <p>C. Position detecting signal output level adjustment</p> <ol style="list-style-type: none"> 1. Connect oscilloscope to test point (T.P. P-V). 2. Measure the peak-to-peak voltage of position detection signal of test point with the oscilloscope. 3. If the measured signal voltage is markedly different from the voltage shown in fig. 16, make the necessary adjustment with the VR701.
<p>Ⓕ Playback frequency response</p> <p>Condition:</p> <ul style="list-style-type: none"> * Playback mode * Output level control ... MAX <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * Oscilloscope * Test tape ... QZZCFM 	<ol style="list-style-type: none"> 1. Test equipment connection is as same as "Head azimuth adjustment" but use the test tape (QZZCFM) instead of head azimuth tape (See fig. 9). 2. Place UNIT into playback mode. 3. Playback the frequency response test tape (QZZCFM). 4. Measure output level at 12.5kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz and 63Hz, and compare each output level with the standard frequency 315Hz, at LINE OUT. 5. Make measurement for both channels. 6. Make sure that the measured value is within the range specified in the frequency response chart. 7. If measured value is not in standard, adjust VR1 (L-CH), VR2 (R-CH) (See fig. 29).
<p>Ⓖ Playback gain</p> <p>Condition:</p> <ul style="list-style-type: none"> * Playback mode * Output level control ... MAX <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * Oscilloscope * Test tape ... QZZCFM 	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 9. 2. Playback standard recording level portion on test tape (QZZCFM 315Hz), and using VTVM measure the output level at LINE OUT jack. 3. Make measurement for both channels. <p>Standard value: $0.66 \pm 0.05 \text{ V}$</p> <p>Adjustment</p> <ol style="list-style-type: none"> 1. If measured value is not standard, adjust VR3 (L-CH), VR4 (R-CH) (See fig. 29). 2. After adjustment, check "Playback frequency response" again.

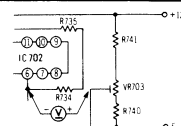


Fig. 13

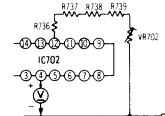


Fig. 14

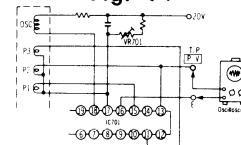


Fig. 15

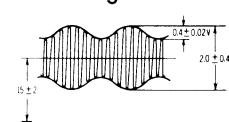


Fig. 16

Playback frequency response chart

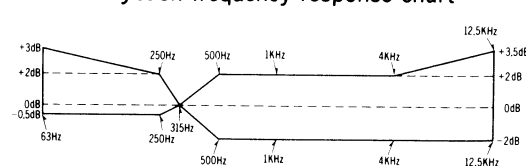
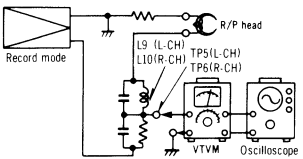
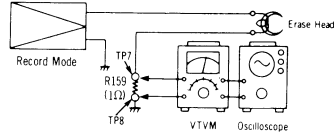
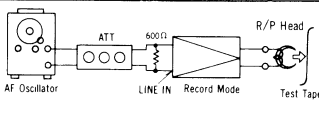
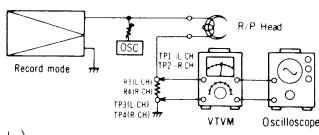
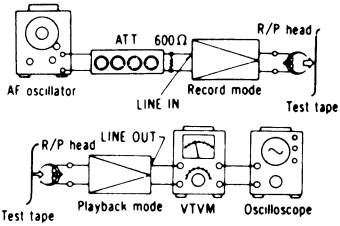
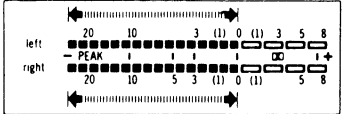
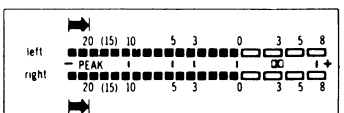
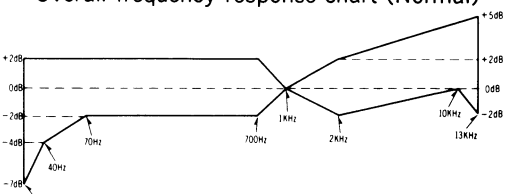
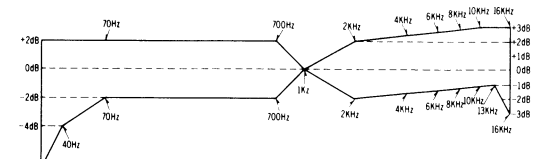
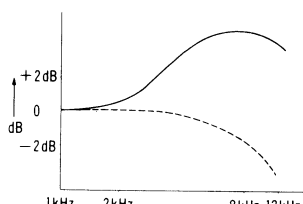
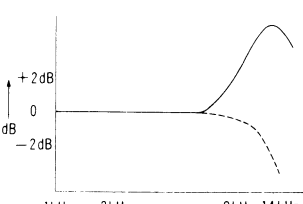


Fig. 17

ITEM	MEASUREMENT & ADJUSTMENT
<p>H Bias leak</p> <p>Condition:</p> <ul style="list-style-type: none"> * Record mode * Input level control ... MAX <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * Oscilloscope 	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 18 (See AMP circuit board on page 10). 2. Place UNIT into record mode. 3. Adjust trap coils L9 (L-CH), L10 (R-CH), so that measured value becomes minimum (See fig. 29). 4. Make adjustment for both channels.  <p>Fig. 18</p>
<p>I Erase current</p> <p>Condition:</p> <ul style="list-style-type: none"> * Record mode * Bias adjustment control ... Center <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * Oscilloscope 	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 19. 2. Place UNIT into record mode and measure voltage at test point 7. 3. Determine erase current with the following formula. $\text{Erase current (A)} = \frac{\text{Voltage across both ends of R159}}{1 (\Omega)}$ <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>Standard value: 95 ± 5 mA (Tape selector ... Metal)</p> </div> <ol style="list-style-type: none"> 4. If measured value is not within standard, adjust VR803.  <p>Fig. 19</p>
<p>J Bias current</p> <p>Condition:</p> <ul style="list-style-type: none"> * Record mode * Bias adjustment control ... Center <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * Oscilloscope * AF oscillator * ATT * Test tape (reference blank tape) <ul style="list-style-type: none"> ... QZZCRA for Normal ... QZZCRX for CrO₂ ... QZZCRY for Fe-Cr ... QZZCRZ for Metal 	<p>A. Adjustment of metal tape</p> <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 20. 2. Place the test tape (QZZCRZ) in the cassette holder. 3. Press the record and pause buttons. 4. Set the tape selector to metal position. 5. Supply 1kHz signal from AF oscillator through ATT to LINE IN. 6. Adjust ATT so that input level is -20 dB below standard recording level. 7. At this time, LINE OUT level indicates 0.066 V. 8. Record 1kHz and 13 kHz signals. 9. Playback and express in dB the difference between output levels of 13kHz and 1kHz. 10. Make sure output level of 13 kHz is not within +1 ± 2 dB compared with output level of 1 kHz. 11. If measured value is not within +1 ± 2 dB, adjust VR13 (L-CH only).  <p>Fig. 20</p> <p>B. Adjustment of normal tape</p> <ol style="list-style-type: none"> 12. Set the tape selector to normal position (Test tape QZZCRA). 13. Change test tape to normal tape (QZZCRA). 14. Press the record and playback buttons. 15. Record 1kHz and 8kHz signals. 16. Playback and express in dB the difference between output levels of 8 kHz and 1 kHz. 17. Make sure output level of 8 kHz is not within +2 ± 2 dB compared with output level of 1 kHz. 18. If measured value is not within +2 ± 2 dB, adjust VR12 (L-CH), VR14 (R-CH). <p>C. Adjustment of Fe-Cr tape and CrO₂ tape</p> <ol style="list-style-type: none"> 19. Set the tape selector to Fe-Cr position. 20. Change test tape to Fe-Cr tape (QZZCRY). 21. Press the record and playback buttons. 22. Record 1kHz and 8kHz signals. 23. Playback and express in dB the difference between output levels of 8 kHz and 1 kHz. 24. Make sure output level of 8 kHz is not within +1 ± 1 dB, compared with output level of 1 kHz. 25. If measured value is not within +1 ± 1 dB, adjust VR15. 26. Set the tape selector to CrO₂ position. 27. Change test tape to CrO₂ tape (QZZCRX). 28. Make the same measurements and adjustments described in steps 21 to 24 above. 29. If measured value is not within +1 ± 1 dB, adjust VR16.  <p>Fig. 21</p>

ITEM	MEASUREMENT & ADJUSTMENT
	<p>Measurement</p> <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 21. 2. Place UNIT into record mode. 3. Read voltage on VTVM and calculate bias current by following formula. $\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10 (\Omega)}$ <p>Standard value: around 600μA (Metal position), around 310μA (Normal position), around 350μA (Fe-Cr position), around 420μA (CrO₂ position)</p>
<p>K Overall gain</p> <p>Condition:</p> <ul style="list-style-type: none"> * Record/playback mode * Input level control ... MAX * Standard input level: <ul style="list-style-type: none"> MIC..... -72\pm3 dB LINE IN ... -24\pm3 dB DIN -72\pm3 dB * Bias adjustment control ... Center * Output level control ... MAX <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * AF oscillator * ATT * Oscilloscope * Test tape (reference blank tape) <ul style="list-style-type: none"> ... QZZCRA for Normal ... QZZCRX for CrO₂ ... QZZCRY for Fe-Cr ... QZZCRZ for Metal 	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 22. 2. Place UNIT into record mode. 3. Supply 1kHz signal (-24 dB) from AF oscillator, through ATT to LINE IN. 4. Adjust ATT until monitor level at LINE OUT becomes 0.66 V. 5. Using test tape, make recording. 6. Playback recorded tape, and measure the output level at LINE OUT on VTVM. <p>Standard value: 0.66\pm0.05 V</p> <ol style="list-style-type: none"> 7. If measured value is not within standard, adjust the following VR. <ul style="list-style-type: none"> Normal VR9 (L-CH), VR10 (R-CH) Fe-Cr VR7 (L-CH), VR8 (R-CH) CrO₂ VR5 (L-CH), VR6 (R-CH) Metal VR801 (L-CH), VR802 (R-CH)  <p>Fig. 22</p>
<p>L Fluorescent meter</p> <p>Condition:</p> <ul style="list-style-type: none"> * Record mode * Input level control ... MAX * Output level control ... MAX * Tape selectors ... Normal position <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * AF oscillator * ATT 	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 23. 2. Set the meter function selector to the "bright" position. 3. Supply 1kHz signal (-24 dB) to the LINE IN jack, then press the record button. 4. Adjust the ATT so that the output level at LINE OUT jack becomes 0.66 V (= standard input level). 5. Adjustment at "0 dB": <ol style="list-style-type: none"> A. Adjust VR303 (L-CH) and VR304 (R-CH) so that the Fluorescent meters show an illuminated indication up to "0 dB" when the input signal level is 0.9 dB higher than the standard input level. B. Then confirm that the Fluorescent meters show an illuminated indication up to "+1 dB" when the input signal level is 1 dB higher than the standard input level. 6. Adjustment at "-20 dB": <ol style="list-style-type: none"> A. Adjust VR301 (L-CH) and VR302 (R-CH) so that the Fluorescent meters show an illuminated indication up to "-20 dB" when the input signal level is 15.1 dB lower than the standard input level. B. Then confirm that the Fluorescent meters show an illuminated indication up to "-15 dB" when the input signal level is 15 dB lower than the standard input level. 7. Repeat twice between steps 3 and 6 above.  <p>Fig. 23</p>  <p>Fig. 24</p>
<p>M Overall frequency response</p> <p>Condition:</p> <ul style="list-style-type: none"> * Record/playback mode * Input level control ... MAX * Bias adjustment control ... Center 	<p>Note:</p> <p>Before measuring and adjusting, make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response).</p> <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 22. 2. Load reference blank test tape and place UNIT into record mode. <p>Overall frequency response chart (Normal)</p>  <p>Fig. 25</p>

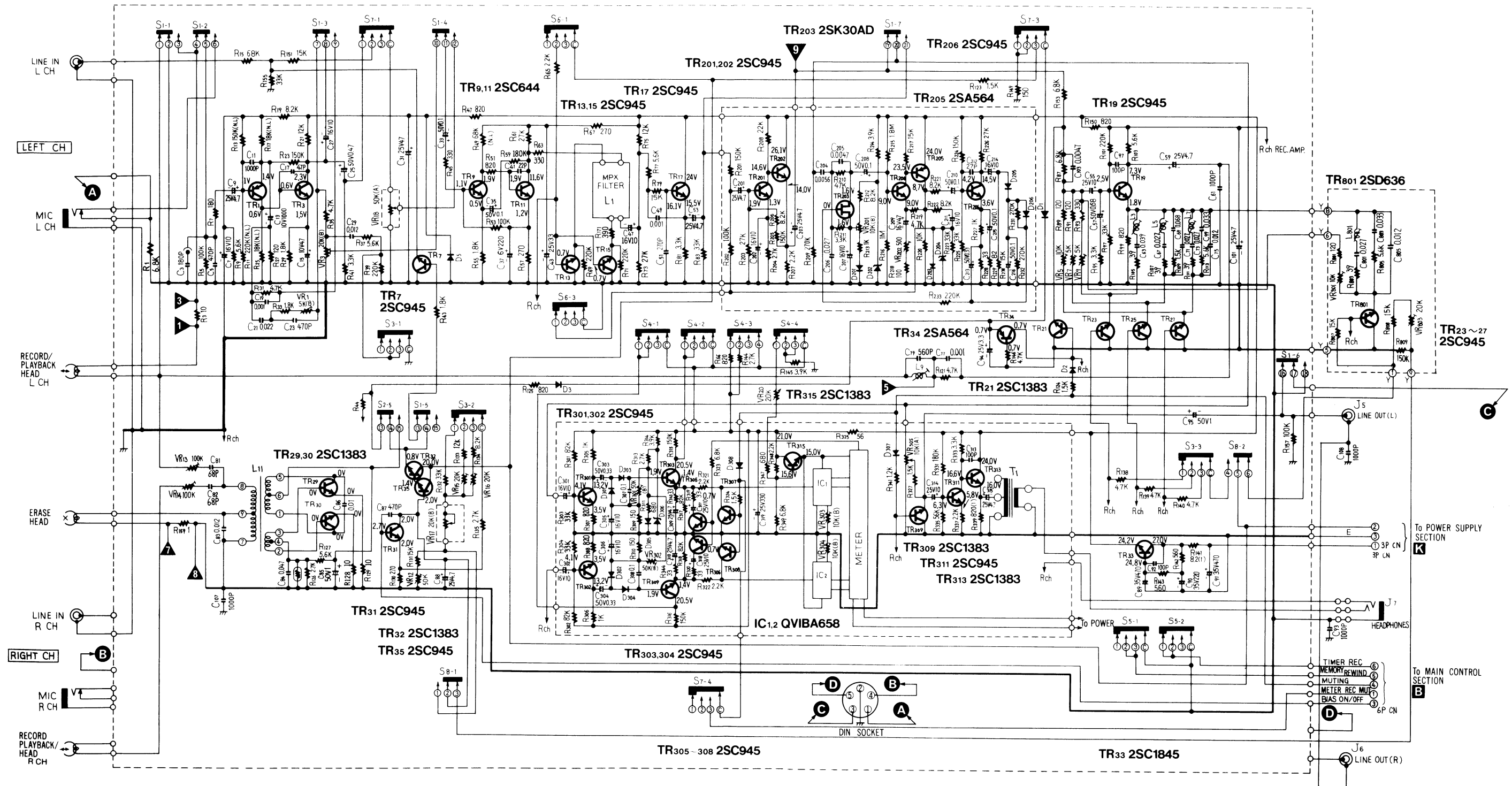
ITEM	MEASUREMENT & ADJUSTMENT
<p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • AF oscillator • ATT • Test tape (reference blank tape) ... QZZCRA for Normal ... QZZCRX for CrO₂ ... QZZCRY for Fe-Cr ... QZZCRZ for Metal 	<p>3. Supply 1kHz signal from AF oscillator through ATT to LINE IN.</p> <p>4. Adjust ATT so that input level is -20 dB below standard recording level (standard recording level = 0 VU).</p> <p>5. At this time, LINE OUT level indicates 0.066 V.</p> <p>6. Record each frequency 30Hz, 40Hz, 70Hz, 700Hz, 1kHz, 2kHz, 7kHz, 10kHz and 13.5kHz (16kHz for CrO₂, Fe-Cr and Metal) at the same level.</p> <p>7. Playback and express in dB the difference between playback output level of each frequency based on playback output level of 1kHz.</p> <p>8. Make sure that the measured value is within the range specified in the overall frequency response chart.</p> <p>Overall frequency response chart (CrO₂, Fe-Cr, Metal)</p>  <p>Fig. 26</p> <p>Adjustment-1</p> <p>1. When the frequency response between the middle and high frequency range becomes higher than the standard value, as shown by the solid line in fig. 27 increase, refer to bias current adjustment.</p> <p>2. When it becomes lower, as shown by dotted line, refer to bias current adjustment.</p> <p>Note:</p> <p>1. For adjustment when the bias current is lower than the standard value use the procedure indicated in adjustment 2, because reducing the bias current beyond this point may worsen the distortion factor.</p> <p>2. For the method of bias current measurement, refer to "Bias current adjustment" on page 5.</p> <p>Adjustment-2</p> <p>When the frequency response is flat in the middle frequency range and makes a sharp rise or drop in the high frequency range, as shown in fig. 28, adjust by turning the following peaking coils.</p> <p>Normal L3 (L-CH), L4 (R-CH) Fe-Cr L5 (L-CH), L6 (R-CH) CrO₂ L7 (L-CH), L8 (R-CH) Metal L801 (L-CH), L802 (R-CH)</p>  <p>Fig. 27</p>  <p>Fig. 28</p>
<p>N Dolby NR circuit</p> <p>Condition:</p> <ul style="list-style-type: none"> • Record mode • Input level control ... MAX <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • AF oscillator • ATT • Oscilloscope 	<p>1. Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain -34.5 dB at TP9 (L-CH), TP10 (R-CH) (frequency 5 kHz).</p> <p>2. Confirm that the value at IN position is 8 dB greater than the value at OUT position of Dolby NR switch.</p> <p>3. When it is not in condition above, adjust as follows.</p> <p>4. Set the VR201 to maximum.</p> <p>5. Set the Dolby NR switch to IN position.</p> <p>6. At this time adjust VR202 so that the reading of VTVM becomes 10 dB greater than the value in step (1) above.</p> <p>7. Adjusting VR201 make the reading of VTVM becomes 2 dB smaller than the value obtained through the adjustment in step (6) above.</p>

SCHEMATIC DIAGRAM

Main Amp Section

TR1 2SA721 TR2 2SC1327

TR204 2SC945



NOTE:

- S1-1~S1-7, S2-1~S2-7 Record/playback select switch (shown in playback position).
- S3-1~S3-4 Tape select switch (1...normal, 2...Fe-Cr, 3...CrO2).
- S4-1~S4-4 Meter select switch (1...peak/bright, 2...peak/dim, 3...VU/dim).
- S5-1, S5-2 Function switch (1...memory rew, 2...off, 3...timer rec).
- S6-1~S6-4 Dolby NR select switch (1...Dolby "OUT", filter "OUT", 2...Dolby "IN", filter "IN", 3...Dolby "IN", filter "OUT").
- S7-1~S7-4 Input select switch (1...mic, 2...line in, 3...rec mute).
- S8-1, S8-2 Tape select switch (for metal tape).
- VR1, 2 Playback equalizer adjustment VR.
- VR3, 4 Playback level adjustment VR.
- VR5, 6 Standard recording level adjustment VR (for CrO2 tape).
- VR7, 8 Standard recording level adjustment VR (for Fe-Cr tape).
- VR9, 10 Standard recording level adjustment VR (for normal tape).

- VR12 Bias current adjustment VR (for normal tape).
- VR13 Bias current adjustment VR (for metal tape).
- VR14 Bias current adjustment VR (for normal tape).
- VR15 Bias current adjustment VR (for Fe-Cr tape).
- VR16 Bias current adjustment VR (for CrO2 tape).
- VR17 Bias current adjustment control.
- VR18, 19 Input level control.
- VR20 Meter brightness adjustment control.
- VR201, 202 Dolby NR adjustment VR.
- VR301, 302 Fluorescent level meter adjustment VR (for -20dB indication).
- VR303, 304 Fluorescent level meter adjustment VR (for 0dB indication).
- VR305, 306 Output level control.
- VR801, 802 Standard recording level adjustment VR (for metal tape).

- VR803 Erase current adjustment VR (for metal tape).
- L3, 4 Recording equalizer adjustment coil (for normal tape).
- L5, 6 Recording equalizer adjustment coil (for Fe-Cr tape).
- L7, 8 Recording equalizer adjustment coil (for CrO2 tape).
- L801, 802 Recording equalizer adjustment coil (for metal tape).
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
- K=1,000 Ω .
- Capacity are in microfarads (μ F) unless specified otherwise.
- P=Pico-farads.
- All voltage values shown in circuitry under no signal condition and record mode with volume control at minimum position.
- For measurement, use VTM.

SPECIFICATIONS

- * Input level control...MAX
- * Output level control...MAX

Playback S/N ratio	Greater than 47 dB
Test tape... QZZCFM	
Overall distortion	Less than 3%
Test tape	
... QZZCRA for Normal	
... QZZCRX for CrO2	
... QZZCRY for Fe-Cr	
... QZZCRZ for Metal	
Overall S/N ratio	Greater than 45 dB
Test tape... QZZCRA	(without NAB filter)

ADJUSTMENT PARTS LOCATION

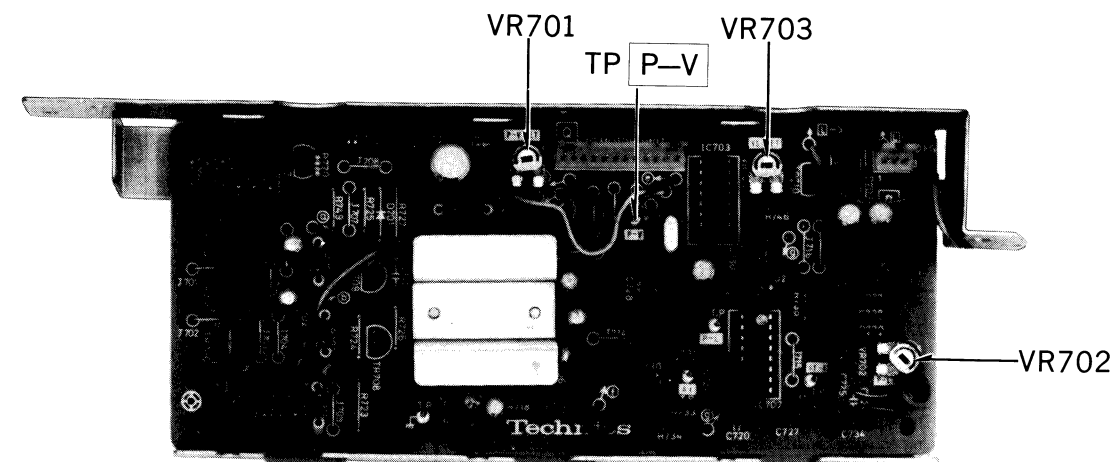
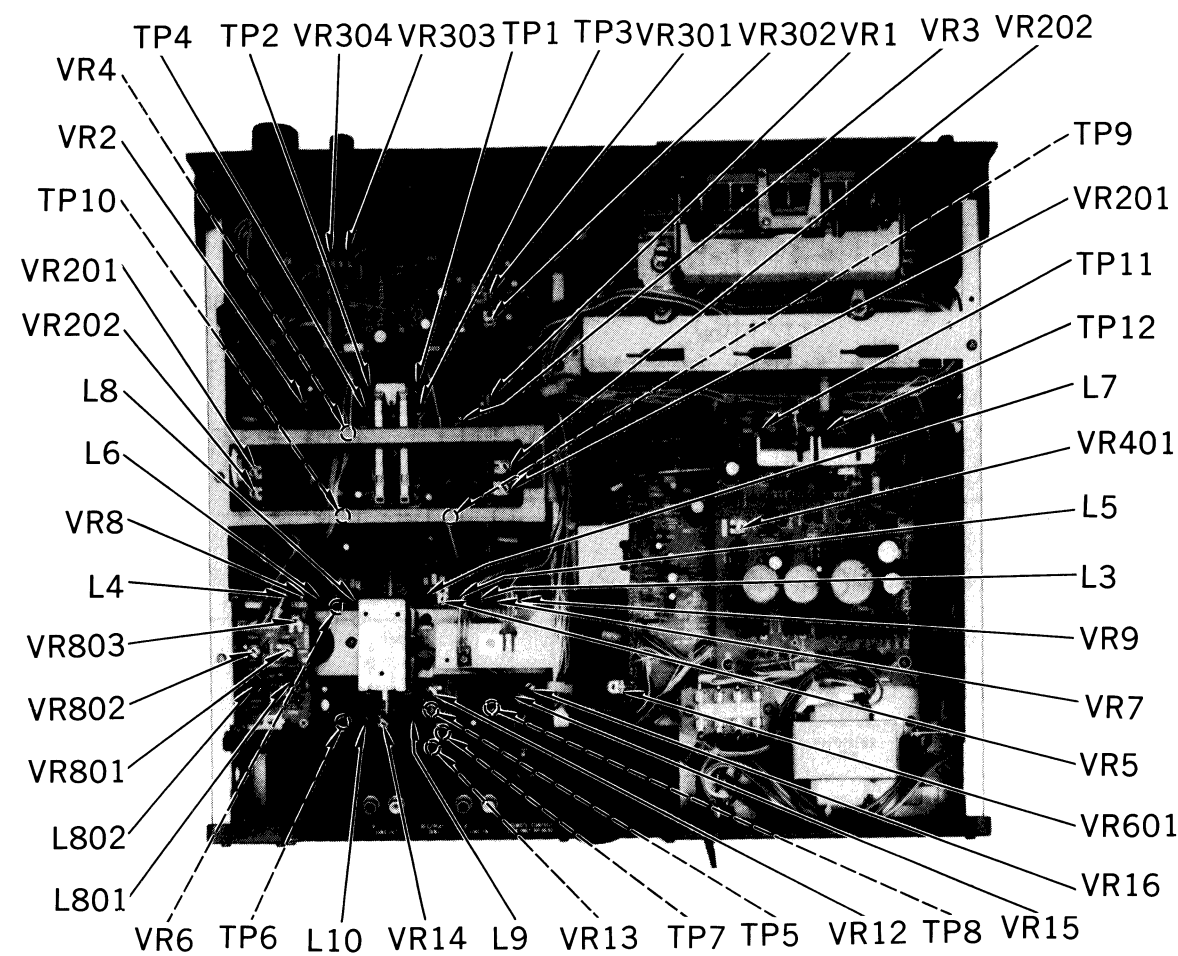
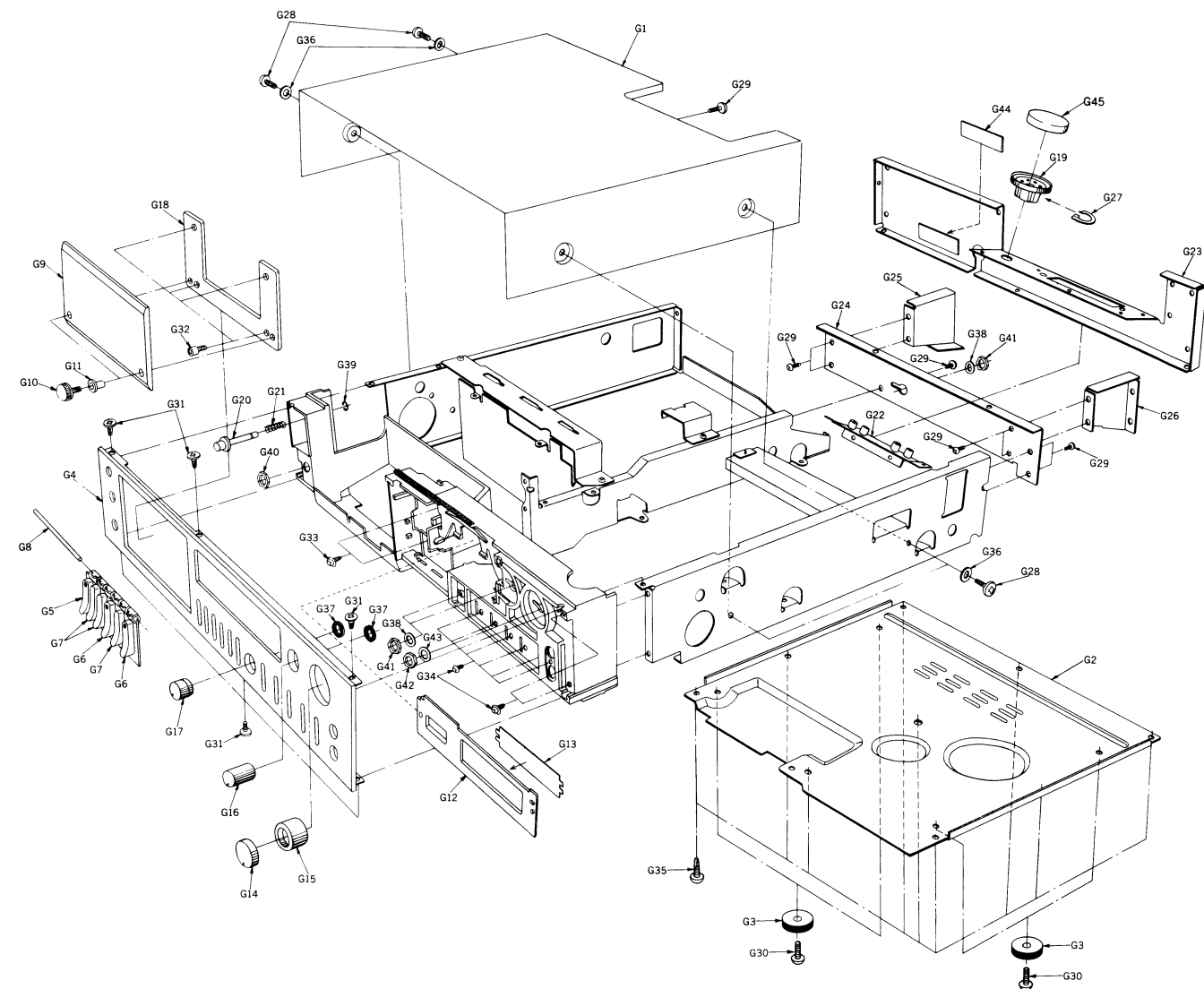


Fig. 29

CABINET PARTS



NOTE: Δ indicates that only parts specified by the manufacturer be used for safety.

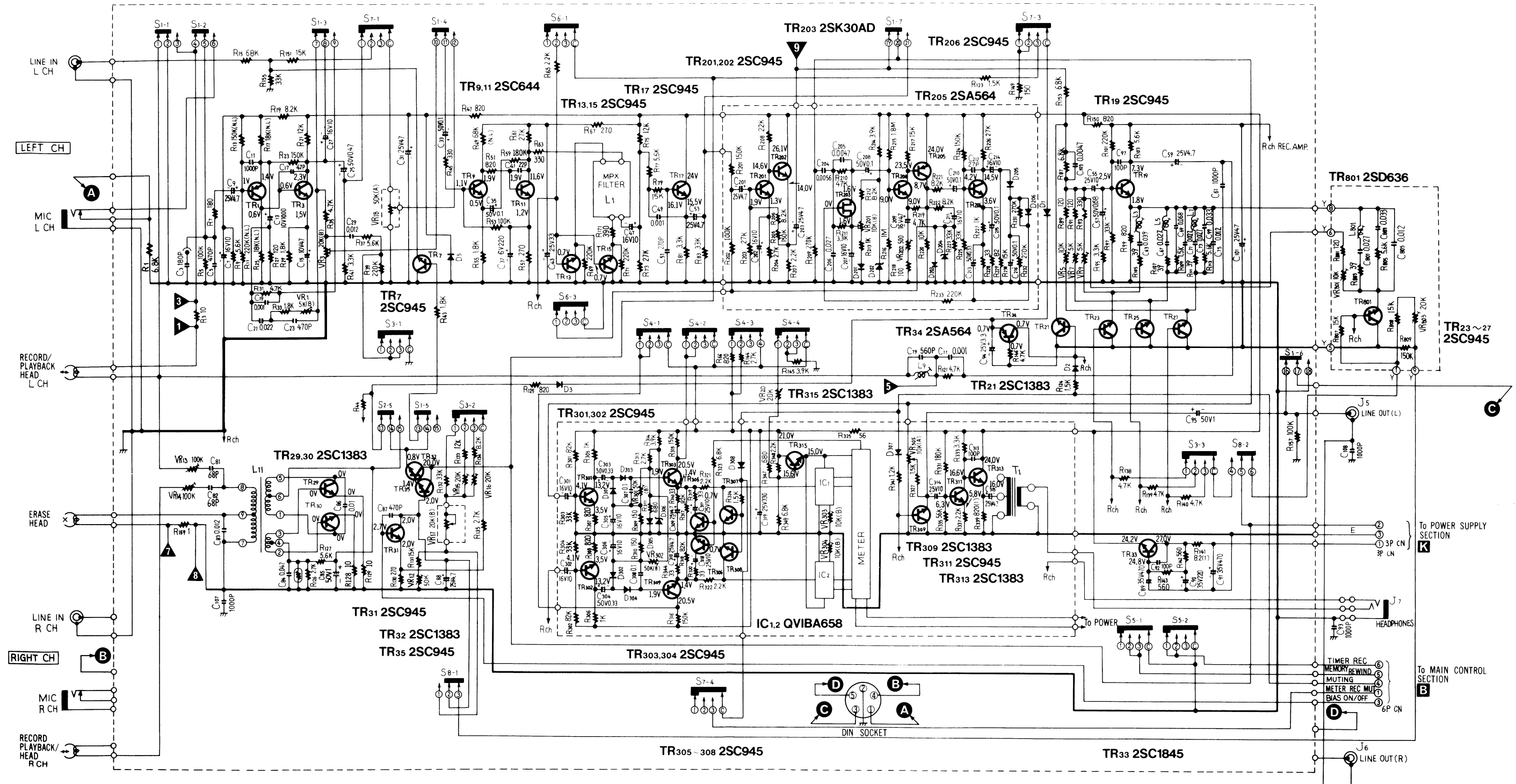
Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
CABINET PARTS											
G1	QGC1102 "Black Type" QGC1116 "Silver Type"	Case Cover	G13	QGL1130	Meter Cover-B	G21	QBC1216	Eject Button Spring	G43	XWS9AW	Washer 9φ
G2	QGC1089	Bottom Cover	G14	QYT0465 "Black Type" QYT0494 "Silver Type"	Volume Knob-A Assembly	G22	QEJ5002S	Jack Board Assembly	G44	QGS2723	Name Plate
G3	QKA1076	Rubber Foot	G15	QYT0466A "Black Type" QYT0495 "Silver Type"	Volume Knob-B Assembly	G23	QMK1725	Back Cover-A	G45	QGS2725	Remote Cap
G4	QYP0886 "Black Type" QYP0888 "Silver Type"	Front Panel Assembly	G16	QYT0456 "Black Type" QYT0497 "Silver Type"	Volume Knob Assembly	G24	QMA3305	Back Cover-B	ACCESSORIES		
G5	QXB0528	Control Button (REC)	G17	QYT0559	Volume Knob-C Assembly (bias adjust)	G25	QMA3306	Back Cover Holder-R	A1	RP023A	Connection Cord
G6	QXB0529	Control Button (PLAY, PAUSE)	G18	QGK2947 "Black Type" QGK2947S "Silver Type"	Cassette Lid	G26	QMA3307	Back Cover Holder-L	A2	QFTC30S011TZ	Demonstration Tape
G7	QGO1416	Control Button (FF, REW, STOP)	G19	QJS0803X	Remote Control Socket	G27	QMA3445	Socket Angle	A3	QQT2671	Instruction Book
G8	QMN2266	Button Shaft	G20	QXB0527A "Black Type" QXB0577 "Silver Type"	Eject Button Assembly	G28	XSB4+8BVS	Screw 4×8	PACKINGS		
G9	QGK2804	Cassette Lid				G29	XTN3+8B	Tapping Screw 3×8	P1	QPN3904	Inside Carton
G10	QHJ1272 "Black Type" QHJ1280 "Silver Type"	Cassette Lid Holder				G30	XSN4+6S	Screw 4×6	P2	QPA0376	Inner Cushion-A (Left)
G11	QBG1551	Rubber Cushion				G31	XSS3+8S	Screw 3×8	P3	QPA0377	Inner Cushion-A (Right)
G12	QKJ0246 "Black Type" QKJ0313 "Silver Type"	Meter Cover-A				G32	XVE26C4FZ "Black Type" XVE26A4FN "Silver Type"	Screw 3×8	P4	QPA0378	Inner Cushion-B (Left)
						G33	XTN3+6B	Tapping Screw 3×6	P5	QPA0379	Inner Cushion-B (Right)
						G34	XSN3+6BVS	Screw 3×6	P6	QPA0380	Spacer (Bottom Side)
						G35	XTN4+8B	Tapping Screw 4×8	P7	QPA0381	Spacer (Top Side)
						G36	XWG4FZ	Flat Washer 4φ	P8	XZB50X65A04	Poly Bag
						G37	QBJT0017	Button Cover			
						G38	XWS8AW	Washer 8φ			
						G39	XUC25FT	Stop Ring 2.5φ			
						G40	QNQ1051	Nut			
						G41	QNQ1004				
						G42	QNQ1039				

SCHEMATIC DIAGRAM

Main Amp Section

TR1 2SA721 TR2 2SC1327

TR204 2SC945



NOTE:

- S1-1~S1-7, S2-1~S2-7 Record/playback select switch (shown in playback position).
- S3-1~S3-4 Tape select switch (1...normal, 2...Fe-Cr, 3...CrO₂).
- S4-1~S4-4 Meter select switch (1...peak/bright, 2...peak/dim, 3...VU/dim).
- S5-1, S5-2 Function switch (1...memory rew, 2...off, 3...timer rec).
- S6-1~S6-4 Dolby NR select switch (1...Dolby "OUT", filter "OUT", 2...Dolby "IN", filter "IN", 3...Dolby "IN", filter "OUT").
- S7-1~S7-4 Input select switch (1...mic, 2...line in, 3...rec mute).
- S8-1, S8-2 Tape select switch (for metal tape).
- VR1, 2 Playback equalizer adjustment VR.
- VR3, 4 Playback level adjustment VR.
- VR5, 6 Standard recording level adjustment VR (for CrO₂ tape).
- VR7, 8 Standard recording level adjustment VR (for Fe-Cr tape).
- VR9, 10 Standard recording level adjustment VR (for normal tape).

- VR12 Bias current adjustment VR (for normal tape).
- VR13 Bias current adjustment VR (for metal tape).
- VR14 Bias current adjustment VR (for normal tape).
- VR15 Bias current adjustment VR (for Fe-Cr tape).
- VR16 Bias current adjustment VR (for CrO₂ tape).
- VR17 Bias current adjustment control.
- VR18, 19 Input level control.
- VR20 Meter brightness adjustment control.
- VR201, 202 Dolby NR adjustment VR.
- VR301, 302 Fluorescent level meter adjustment VR (for -20dB indication).
- VR303, 304 Fluorescent level meter adjustment VR (for 0dB indication).
- VR305, 306 Output level control.
- VR801, 802 Standard recording level adjustment VR (for metal tape).

- VR803 Erase current adjustment VR (for metal tape).
- L3, 4 Recording equalizer adjustment coil (for normal tape).
- L5, 6 Recording equalizer adjustment coil (for Fe-Cr tape).
- L7, 8 Recording equalizer adjustment coil (for CrO₂ tape).
- L801, 802 Recording equalizer adjustment coil (for metal tape).
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
- K=1,000Ω.
- Capacity are in microfarads (μF) unless specified otherwise.
- P=Pico-farads.
- All voltage values shown in circuitry under no signal condition and record mode with volume control at minimum position.
- For measurement, use VTVM.

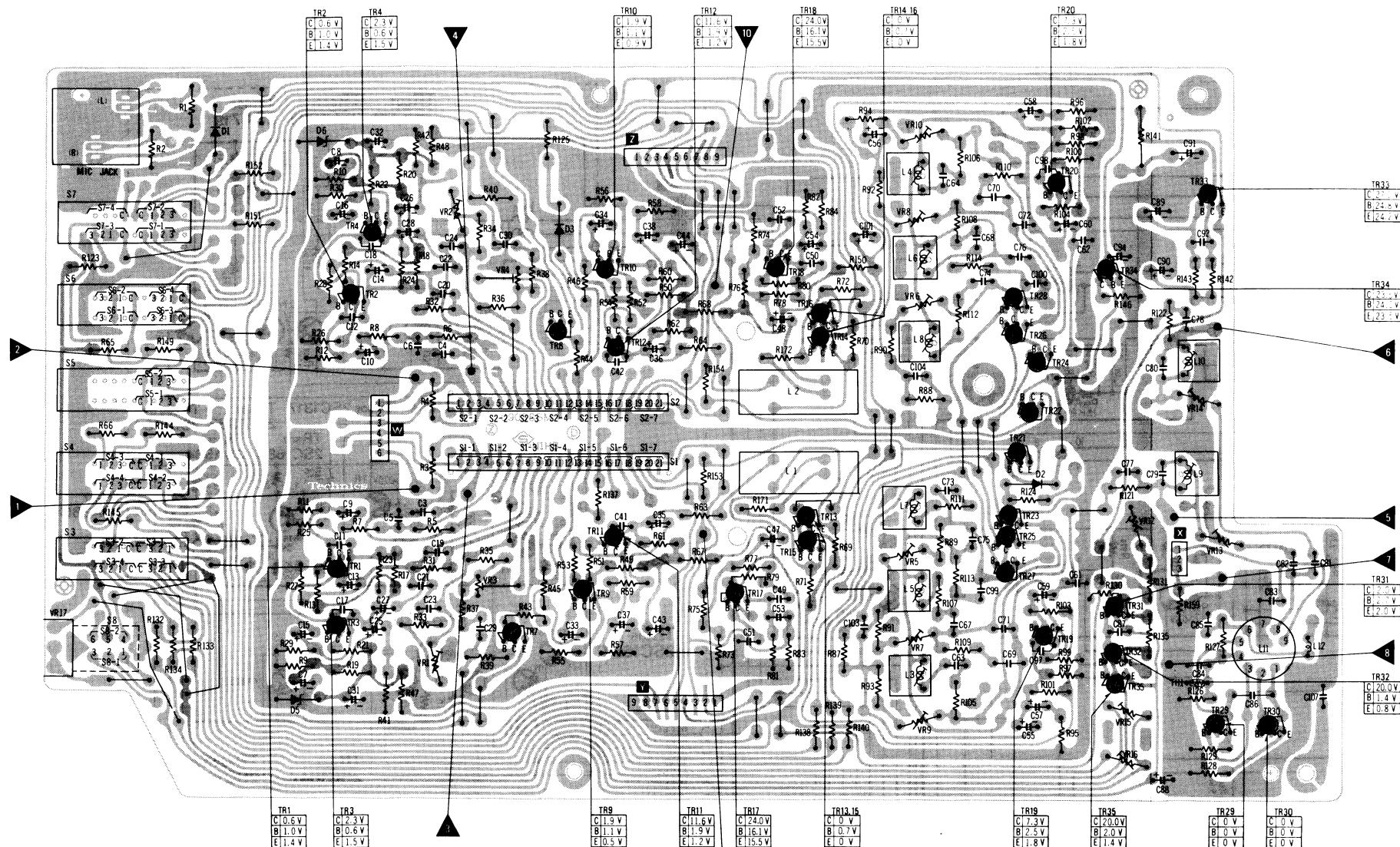
SPECIFICATIONS

* Input level control... MAX
* Output level control... MAX

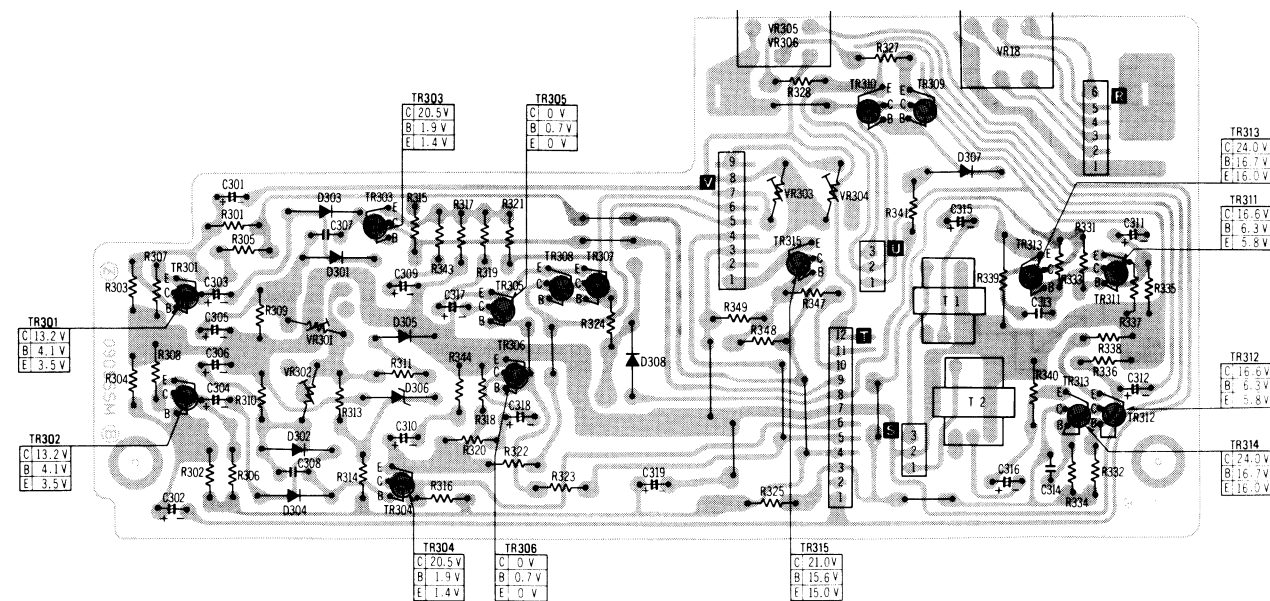
Playback S/N ratio Test tape... QZZCFM	Greater than 47 dB
Overall distortion Test tape ... QZZCRA for Normal ... QZZCRX for CrO ₂ ... QZZCRY for Fe-Cr ... QZZCRZ for Metal	Less than 3%
Overall S/N ratio Test tape... QZZCRA	Greater than 45 dB (without NAB filter)

CIRCUIT BOARD

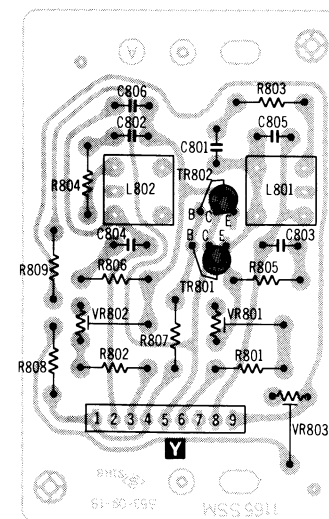
Main Amp



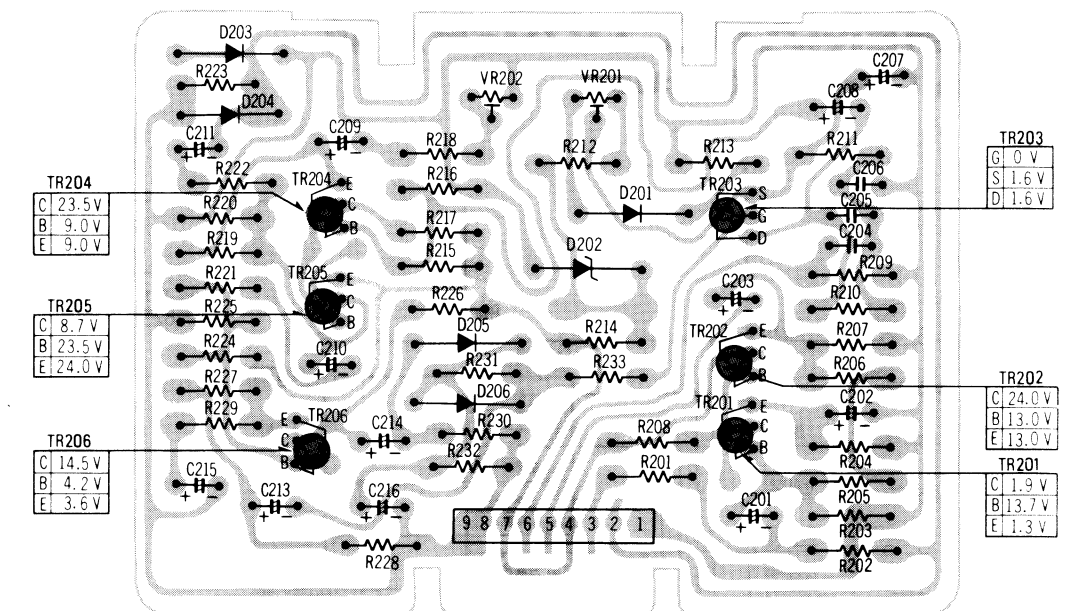
Output



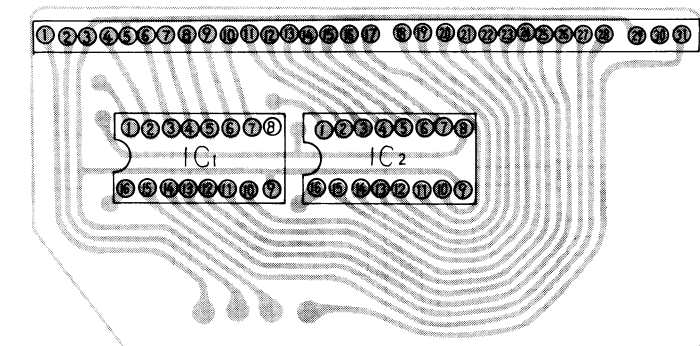
Equalizer



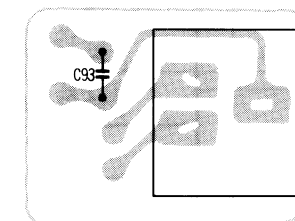
Dolby



FL Meter



Headphones Jack



Jack



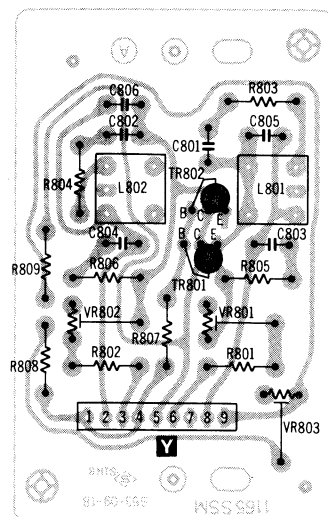
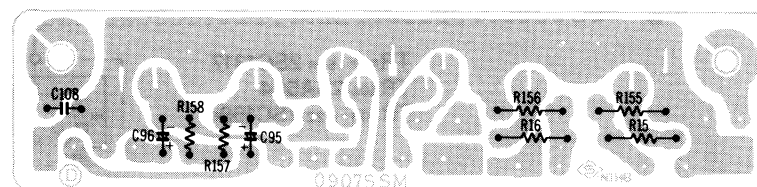
NOTE:

The circuit shown in red on the conductor is B circuit.
Values indicated in are DC voltage between the chassis and electrical parts.

NOTE: RESISTORS

CAPACITORS

NOTE: Δ indicates that only parts specified by the manufacturer be used for safety.



The circuit shown in red on the conductor is B circuit.
Values indicated in are DC voltage between the chassis and electrical parts.

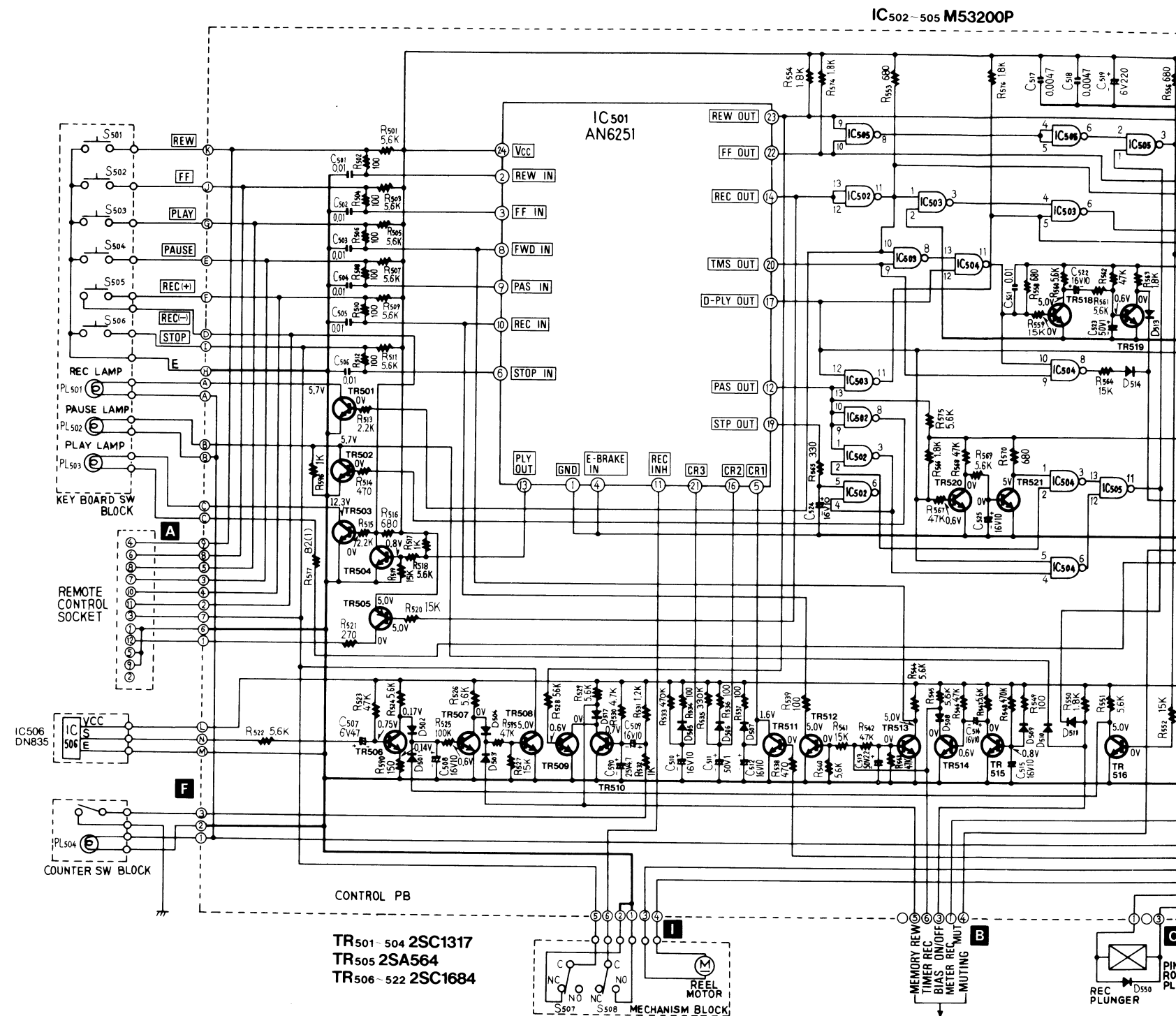
Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.
RESISTORS		R128, 129	ERD25FJ100	R331, 332	ERD25TJ184	R544, 545	ERD25FJ562	R710, 711, 712, 713, 714, 715	ERD25FJ102
R1, 2	ERD25FJ682					R546	ERD25TJ473		ERD25FJ272
R3, 4	ERD25FJ100	R130	ERD25FJ271	R333, 334	ERD25FJ332	R547	ERD25FJ562	R716	
R5, 6	ERD25TJ104	R131	ERD25TJ153			R548	ERD25TJ474	R717, 718	ERD25FJ103
R7, 8	ERD25FJ181	R132	ERD25TJ333	R335, 336	ERD25TJ563				
R9, 10	ERD25FJ562	R133	ERD25TJ123			R549	ERD25FJ101	R719	ERD50FJ100
R11, 12	ERD25TJ224	R134	ERD25FJ822	R337, 338	ERD25FJ222	R550	ERD25FJ182	R720	ERD25FJ182
R13, 14	ERD25TJ154	R135	ERD25FJ272			R551	ERD25FJ562	R721	ERX12ANJ5R6
R15, 16	ERD25TJ683	R138, 139, 140	ERD25FJ472	R339, 340	ERD25FJ122	R552	ERD25TJ153	R722	ERD25FJ182
R17, 18	ERD25TJ183		ERD25FJ472		ERG1ANJ821	R553	ERD25FJ681	R728	ERD25TJ183
R19, 20	ERD25FJ822	R141	ERX1ANJ8R2	R341	ERD25FJ122	R554	ERD25FJ182	R729	ERD25FJ121
		R142	ERD25FJ222	R343, 344		R556, 558	ERD25FJ681	R730	ERD25TJ823
		R143	ERD25FJ561		ERD25FJ330		ERD25FJ153	R731	ERD25TJ473
R21, 22	ERD25TJ123			R347	ERD25FJ681	R559	ERD25TJ153	R732	ERD25FJ272
R23, 24	ERD25TJ154	R144	ERD25FJ272	R348	ERD25FJ222	R560, 561		R733	ERD25FJ103
R25, 26	ERD25TJ183	R145	ERD25FJ392	R349	ERD25FJ682		ERD25FJ562		
R27, 28	ERD25FJ121	R146	ERD25FJ472	R401	ERX1ANJ2R2	R562	ERD25TJ473	R734	ERD25FJ472
R29, 30	ERD25FJ182	R149	ERD25FJ151				ERD25TJ473	R735	ERD25TJ104
R31, 32	ERD25FJ472	R150	ERD25FJ821	R402	ERG1ANJ471	R563	ERD25FJ182	R736	ERD25FJ822
R33, 34	ERD25FJ182			R403	ERD25FJ472	R564	ERD25TJ153	R737	ERD25TJ153
R35, 36	ERD25FJ472	R151, 152	ERD25TJ153	R404	ERD25FJ121	R565	ERD25FJ331	R738	ERD25FJ822
R37, 38	ERD25FJ562	R153, 154	ERD25FJ682	R405	ERD25FJ272	R566	ERD25FJ182	R739	ERD25FJ392
R39, 40	ERD25TJ224			R406	ERD25FJ103	R567, 568		R740	ERD25FJ102
		R155, 156	ERD25TJ333	R407	ERD25FJ472		ERD25TJ473	R741	ERD25FJ821
R41, 42	ERD25TJ333			R408	ERD25FJ272	R569	ERD25FJ562	R742	ERD25TJ225
R43, 44	ERD25FJ182	R157, 158	ERD25TJ333	R409	ERD25TJ273	R570	ERD25FJ681	R743	ERD25FJ121
R45, 46	ERD25FJ331			R410, 411		R571	ERD25FJ392		
R47, 48	ERD25FJ821		ERD25TJ104		ERD25FJ102	R572	ERD25TJ123	R744	ERD25TJ273
R49, 50	ERD25FJ683	R159	ERD25FJ1R0	R412	ERD25TJ153	R573	ERD25FJ472	R745	ERD25FJ821
R51, 52	ERD25FJ821							R746	ERD25FJ152
R53, 54	ERD25TJ104	R171, 172	ERD25FJ391	R413	ERD25FJ471	R574	ERD25FJ182	R748	ERD25FJ152
R55, 56	ERD25FJ182		ERD25FJ391	R414	ERD25TJ473	R575	ERD25FJ562	R801, 802	
R57, 58	ERD25FJ271		ERG1ANJ560	R415	ERX1ANJ1R0	R576	ERD25FJ182		ERD25FJ121
R59, 60	ERD25TJ184		ERD25TJ154	R416	ERG1ANJ681	R577	ERG1ANJ820	R803, 804	
			ERD25TJ104	R417	ERD25FJ391	R590	ERD25FJ151		ERD25FJ390
R61, 62	ERD25FJ272		ERD25TJ273	R418	ERD25FJ221	R592, 593		R805, 806	
R63, 64	ERD25FJ331		ERD25FJ272	R419	ERD25FJ152		ERD25FJ331		ERD25FJ562
R65	ERD25FJ222		ERD25TJ154	R420	ERG1ANJ391	R595	ERD25FJ102	R807, 808	
R66	ERD25FJ821		ERD25FJ822	R421	ERD25FJ471	R596	ERD25FJ102		ERD25TJ153
R67, 68	ERD50FJ271		ERD25FJ222	R422, 423		R601	ERD25TJ153	R809	ERD25TJ154
R69, 70, 71, 72			ERD25TJ223		ERD25FJ121	R602	ERD25FJ561	R811	ERD25FJ681
	ERD25TJ224							VARIABLE RESISTORS	
R73, 74	ERD25TJ273	R209×2	ERD25TJ274	R424	ERD25FJ471	R603	ERD25TJ153	VR1, 2	EVNKA4A00B53
R75, 76	ERD25TJ123	R210×2	ERD25TJ473	R425	ERD50FJ220	R604	ERD25FJ122	VR3, 4	EVNKA4A00B24
R77, 78	ERD25FJ562	R211×2	ERD25FJ332	R426	ERD25FJ121	R605	ERD25FJ221	VR5, 6	EVNKA4A00B14
R79, 80	ERD25TJ153	R212×2	ERD25FJ822	R427	ERX1ANJ120	R606	ERD25FJ2R2		
		R213×2	ERD25FJ102	R428	ERG1ANJ390	R607	ERD25FJ151	VR7, 8, 9, 10	
R81, 82	ERD25FJ332	R214×2	ERD25FJ392	R429	ERQ12HJ180	R608	ERD25FJ102		EVNKA4A00B53
R83, 84	ERD25TJ333	R215×2	ERD25TJ185	R430	ERD50FJ220	R609	ERD25FJ103	VR12	EVNKA4A00B54
R87, 88	ERD25FJ682	R216×2	ERD25TJ105	R501	ERD25FJ562	R610	ERD25FJ2R2	VR13, 14	EVNKA4A00B15
R89, 90, 91, 92		R217×2	ERD25TJ153	R502	ERD25FJ101	R611	ERD25FJ221	VR15, 16	EVNKA4A00B24
	ERD25FJ121	R218×2	ERD25FJ101	R503	ERD25FJ562	R612	ERD25FJ561	VR17	QVHCWF20B24A
R93, 94	ERD25FJ331			R504	ERD25FJ101			VR18	EWKKNXF22A54
R95, 96	ERD25FJ332							VR20	EVHKG3AS15B24
R97, 98	ERD25TJ333	R219×2	ERD25FJ472	R505	ERD25FJ562	R613	ERD25FJ122	VR201×2	
R99, 100	ERD25FJ821	R220×2	ERD25FJ103	R506	ERD25FJ101	R614	ERD25TJ153	VR202×2	EVNKA4A00B14
R101, 102		R221×2, 222×2	ERD25FJ822	R507	ERD25FJ562	R615	ERD25FJ561		EVNKA4A00B52
	ERD25TJ224		ERD25TJ333	R508	ERD25FJ101	R616	ERD25FJ682	VR301, 302	
R103, 104	ERD25FJ562		ERD25TJ154	R509	ERD25FJ562	R617	ERD25FJ103	VR303, 304	EVNKA4A00B54
			ERD25TJ333	R510	ERD25FJ101	R618	ERD25TJ153		EVNKA4A00B54
R105, 106, 107, 108	ERD25FJ390		ERD25FJ272	R511	ERD25FJ101	R619	ERG1ANJ271	VR401, 701, 702	
R109, 110			ERD25FJ102	R512	ERD25FJ562	R620	ERD25FJ562		EVNKA4A00B53
	ERD25FJ152		ERD25FJ560	R513	ERD25FJ101	R621	ERD25FJ331	VR601	EVNKA4A00B52
R111, 112			ERD25FJ820	R514	ERD25FJ222	R622	ERD25FJ682	VR701, 802	
					ERD25FJ471	R623	ERD25TJ153		EVNKA4A00B14
R113, 114	ERD25FJ390	R230×2	ERD25TJ153	R515	ERD25FJ222	R624	ERG1ANJ271	VR803	EVNKA4A00B14
		R231×2, 232×2	ERD25TJ274	R516	ERD25FJ681	R625	ERD25FJ562		EVNKA4A00B54
R121, 122	ERD25FJ562		ERD25TJ124	R517	ERD25FJ102	R626	ERD25FJ331	VR601	EVNKA4A00B52
		R301, 302	ERD25TJ224	R518	ERD25FJ562	R627	ERD25FJ562	VR703	EVNKA4A00B52
R123, 124	ERD25FJ472		ERD25TJ823	R519, 520		R628	ERD25TJ473	R801, 802	
		R303, 304	ERD25TJ333		ERD25TJ153	R629	ERD25FJ122		EVNKA4A00B14
R125	ERD25FJ821		ERD25TJ333	R521	ERD25FJ271	R630	ERD25FJ562	VR803	EVNKA4A00B54
R126	ERD25FJ272	R305, 306	ERD25FJ102	R522	ERD25FJ562	R631	ERD25FJ682		EVNKA4A00B54
R127	ERD25FJ562		ERD25FJ821	R523	ERD25TJ473	R632	ERD25FJ153	VR601	EVNKA4A00B52
		R307, 308		R524	ERD25FJ562	R634	ERG1ANJ271		
			ERD25FJ821	R525	ERD25TJ104			CAPACITORS	
R309, 310				R526	ERD25FJ562	R635	ERD25FJ562	C3, 4	ECCD1H181K
			ERD25TJ154	R527	ERD25TJ153	R636	ERD25FJ682	C5, 6	ECKD1H471K
R311	ERD25FJ681			R528	ERD25TJ563	R638	ERD25FJ272	C7, 8	ECEA1HS100
R313	ERD25FJ272			R529	ERD25FJ562	R639	ERD25FJ103	C9, 10	ECEA25M4R7
				R530	ERD25FJ472	R640	ERD50FJ181	C11, 12	ECFWD102KVY
R314	ERD25FJ392			R531	ERD25FJ122	R641	ERD25FJ272	C13, 14	ECEA1AS101
R315, 316				R532	ERD25FJ102	R642	ERD25FJ103	C15, 16	ECEA1AS470
	ERD25TJ154			R533	ERD25TJ474	R644	ERD25FJ272	C17, 18	ECCD1H470K
R317, 318			ERD25TJ823	R534	ERD25FJ101	R645	ERD25TJ153	C19, 20	ECQM05102KZ
				R535	ERD25TJ334	R646	ERD25FJ102	C21, 22	ECQM05223KZ
R319, 320									
		R321, 322	ERD25FJ330	R536, 537		R647	ERD50FJ4R7	C23, 24	ECKD1H471K
					ERD25FJ101	R701	ERD25FJ560	C25, 26	ECEA50MR47
			ERD25FJ222	R538	ERD25FJ471	R702	ERD25FJ103	C27, 28	ECEA1HS100
R323	ERD25FJ682			R539	ERD25FJ101	R703	ERD25FJ560	C29, 30	ECQM05123KZ
R324	ERD25FJ102			R540	ERD25FJ562	R704	ERD25FJ103	C31, 32	ECEA1ES470
R325	ERQ12HJ560			R541	ERD25TJ153	R705	ERD25FJ560	C33, 34	ECEA50MR1
R327, 328				R542, 543		R706, 707, 708, 709	ERD25FJ560	C35, 36	ECEA50ZR1
			ERD25FJ152		ERD25TJ473		ERD25FJ103	C37, 38	ECEA1AS221

SCHEMATIC DIAGRAM

Main Control Section

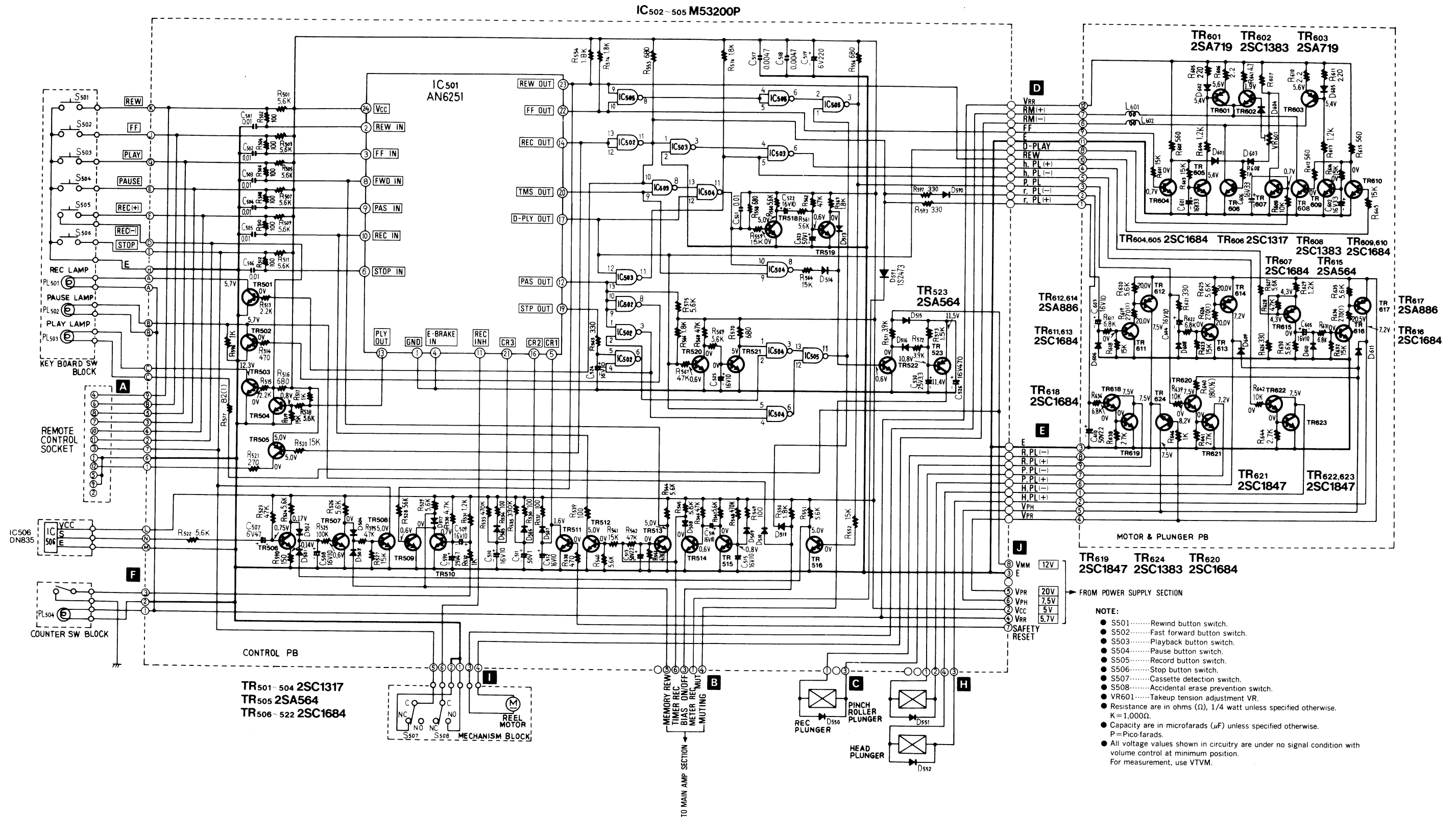
Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.
C41, 42	ECCD1H220K	C509	ECEA1HS100	Tr309, 310	2SC1383	D411	Δ RVD10DC4
C43, 44	ECEA1VS330	C510	ECEA16Z10			D412	Δ RVD10DC4R
		C511	ECEA50Z1	Tr311, 312		D413	SM112
C47, 48	ECEA1HS100	C512	ECEA16Z10			D414	Δ RVD10DC4R
C49, 50	ECQM05102KZ	C513	ECEA50Z2R2	Tr313, 314, 315		D415	MV121
C51, 52	ECCD1H271K	C514	ECEA16N10			D501, 502, 503, 504, 505, 506, 507, 508	MA150
C53, 54	ECEA1JS47	C515	ECEA1HS100			D509	OA91
C55, 56	ECEA1HS100	C517, 518	ECCD1H472KB	Tr401	2SC1226		
C57, 58	ECEA50ZR68			Tr402, 403, 404, 405	2SC1684		
C59, 60	ECEA2SM47						
C61, 62	ECCD1H102K	C519	ECEA1AS221	Tr406	2SA564		
C63, 64	ECQM05393KZ	C521	ECCD1H103ZF	Tr407	2SD389		
C67, 68	ECQM05273KZ	C522	ECEA16Z10	Tr408, 409			
		C523	ECEA50Z1				
C69, 70	ECQM05683KZ	C524, 525		Tr501, 502, 503	2SC1684		
C71, 72, 73, 74							
C75, 76	ECQM05273KZ	C526	ECEA1HS100	Tr504	2SC1317		
C77, 78	ECQM05123KZ	C530	ECEA1CS471	Tr505	2SC1684		
C79, 80	ECQS1561JZ	C530	ECEA50ZR47	Tr506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 518, 519, 520, 521, 522	2SA564		
C81, 82	ECCD1H680K	C601, 602	ECEA1CS330				
C83	ECQF4123KZ						
C84	ECQM05473KZ	C603, 604, 605	ECEA16Z10	Tr523	2SC1684		
C85	ECEA50Z1						
C86	ECQF4103KZH						
		C606	ECEA16Z33	Tr601	2SA719		
C87	ECCD1H471K	C610	ECEA50Z2R2	Tr602	2SC1846		
C88	ECEA1JS47	C701, 702, 703		Tr603	2SA719		
C89	ECEA1VS471			Tr604, 605			
C90	ECEA1VS221	C704	ECEA50ZR47				
C91	ECEA1VS471	C705, 706, 707		Tr606	2SC1684		
C92	ECCD1H101K			Tr607	2SC1684		
C93	ECCD1H102KB	C708	ECQM05103KZ	Tr608	2SC1383		
C94	ECEA25Z3R3	C709	ECQM05473KZ	Tr609, 610, 611			
C95, 96	ECEA50Z1	C710	ECQM05393KZ	Tr612	2SC1684		
C97, 98	ECCD1H101K	C712	ECFDD104KXY	Tr613	2SC1684		
		C713	ECEA25Z100				
C99, 100	ECQM05333KZ	C714	ECQM05393KZ	Tr614	2SA886		
C101	ECEA1ES470	C715	ECQM05683KZ	Tr615	2SA564		
C103, 104		C716	ECQM05104KZ	Tr616	2SC1684		
		C717	ECQM05103KZ	Tr617	2SA886		
C107, 108		C718	ECQM05223KZ	Tr618	2SC1684		
C201×2	ECCD1H102K	C719	ECEA50Z2R2	Tr619	2SC1847		
C202×2	ECEA1HS100	C720	ECQM05562KZ	Tr620	2SC1684		
C203×2	ECEA25Z4R7	C721	ECQM05153KZ	Tr621	2SC1847		
C204×2	ECQM05562KZ	C722	ECQM05562KZ	Tr622	2SC1684		
C205×2	ECQM05472KZ	C723	ECCD1H471KB	Tr623	2SC1847		
C206×2	ECQM05273KZ	C724	ECQM05123KZ	Tr624	2SC1406		
		C725	ECQM05182KZ	Tr701, 702, 703			
C207×2	ECEA1HS100	C726	ECQS1682JZ				
C208×2	ECEA50MR1	C727	ECQM05223KZ	Tr704, 705, 706			
C209×2	ECEA1ES470	C728, 729					
C210×2	ECEA50Z1						
C211×2	ECEA1HS100	C730	ECCD1H220KC	Tr707	2SC1318		
C212×2	ECCD1H270KC	C731, 732, 733	ECQM05562KZ	Tr710	2SC1383		
C213×2	ECEA50Z3R3			Tr801, 802			
C214×2	ECEA1HS100	C734	ECEA1CS330				
C215×2	ECEA50Z1	C801, 802	ECQM05332KZ				
C216×2	ECEA50Z1						
C301, 302	ECEA1HS100						
C303, 304	ECEA50Z3R3						
C305, 306	ECEA1HS100						
C307, 308	ECFWD104MXY						
C309, 310	ECEA25Z4R7						
C311, 312	ECEA1HS100						
C313, 314	ECCD1H101K						
C315, 316	ECEA1ES470						
C317, 318	ECEA1HS100						
C319	ECEA1ES331						
C401	Δ ECET35R2200S						
C402	ECEA1VS101						
C404	ECEA1ES221						
C405	Δ ECET16R2200S						
C406	ECEA1HS100						
C407	ECCD1H102KB						
C408	Δ ECET25R4700S						
C409, 410							
C411	Δ ECEA1AS472						
C501, 502, 503, 504, 505, 506	ECQM05473KZ						
	ECCD1H103ZF						
C507	ECEA1AS470						
C508	ECEA16Z10						

Ref. No.	Part No.	Part Name & Description
TRANSFORMERS		
T1, 2	QLT2D26X	Headphone Transformer
T401	Δ QLP40EMX	Power Transformer
*For United Kingdom.		
T401	Δ QLPD29EMX	"
*For All European areas except United Kingdom.		
COILS		
L1, 2	QLM924K	MPX Filter
L3, 4, 5, 6, 7, 8	QLQX0331W	3mH Coil
L9, 10	QLQX0731W	7mH Coil
L11	QLB0189	Bias Oscillator Coil
L12	QLQX2421Y	Choke Coil
L401, 601, 602	QLQZ1014D	"
L801, 802	QLQX0331W	Peaking Coil
SWITCHES		
S1, 2	QSS7203	Slide Switch (Record/Playback Selector)
S3, 4, 5, 6, 7	QST4311	Lever Switch
S401	Δ QSW2214	Push Switch (Power ON/OFF)
S402	Δ QSR1407	Voltage Select Switch
S501, 502, 503, 504, 505, 506	QSW1111H	Control Key Switch
S507, 508	QSM0067	Micro Switch
PILOT LAMPS		
PL501, 502, 503	XAMQ34S600W	Pilot Lamp
PL505	XAMQ41S400	"
FUSES		
F401	Δ XBAQ0009	Mini Fuse (800mA)
F402	Δ XBAQ0004	Mini Fuse (1AT)
F403, 404		
F405	Δ XBAQ0010	Mini Fuse (1.6AT)
F405	Δ XBAQ0006	Mini Fuse (315mA)



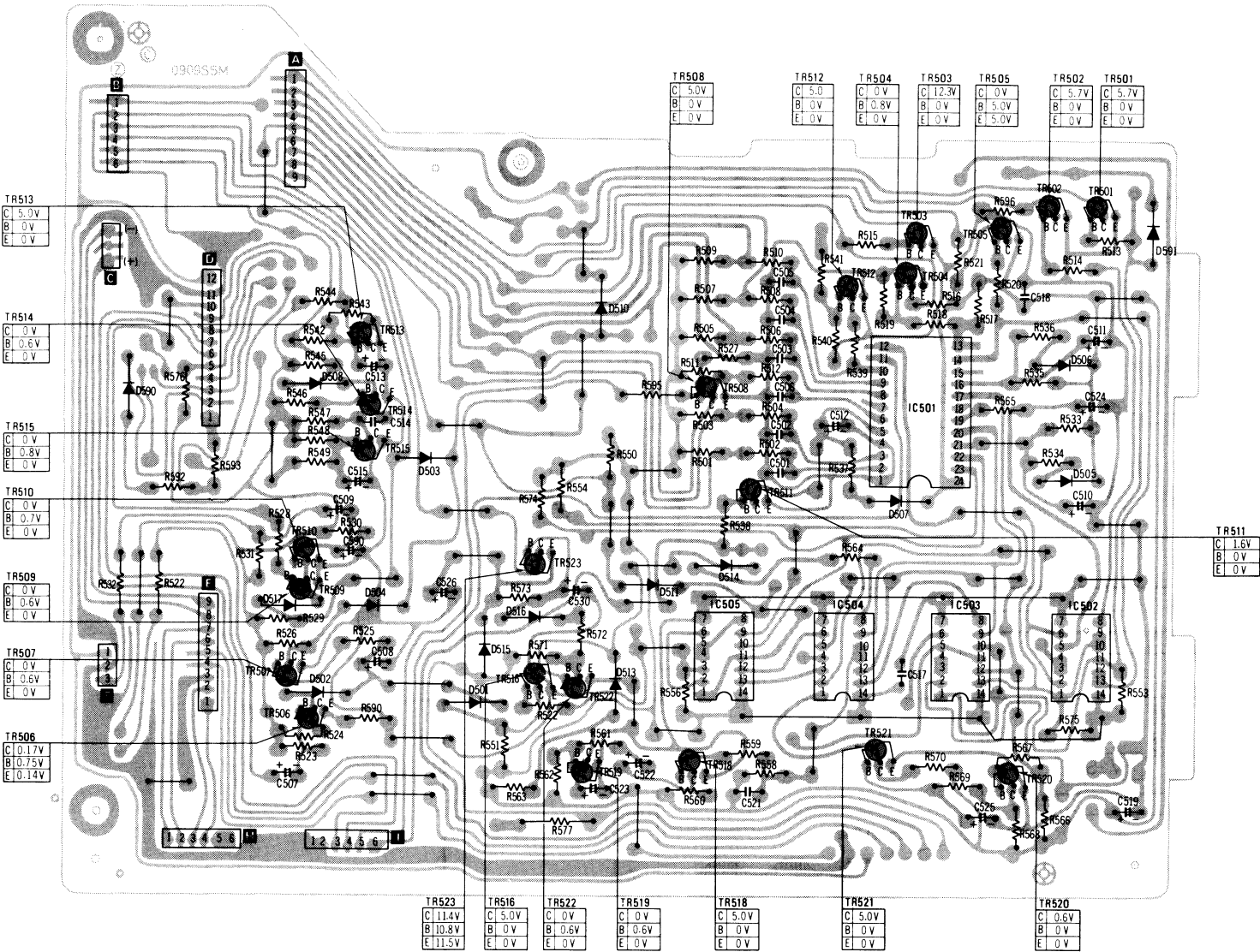
SCHEMATIC DIAGRAM

Main Control Section

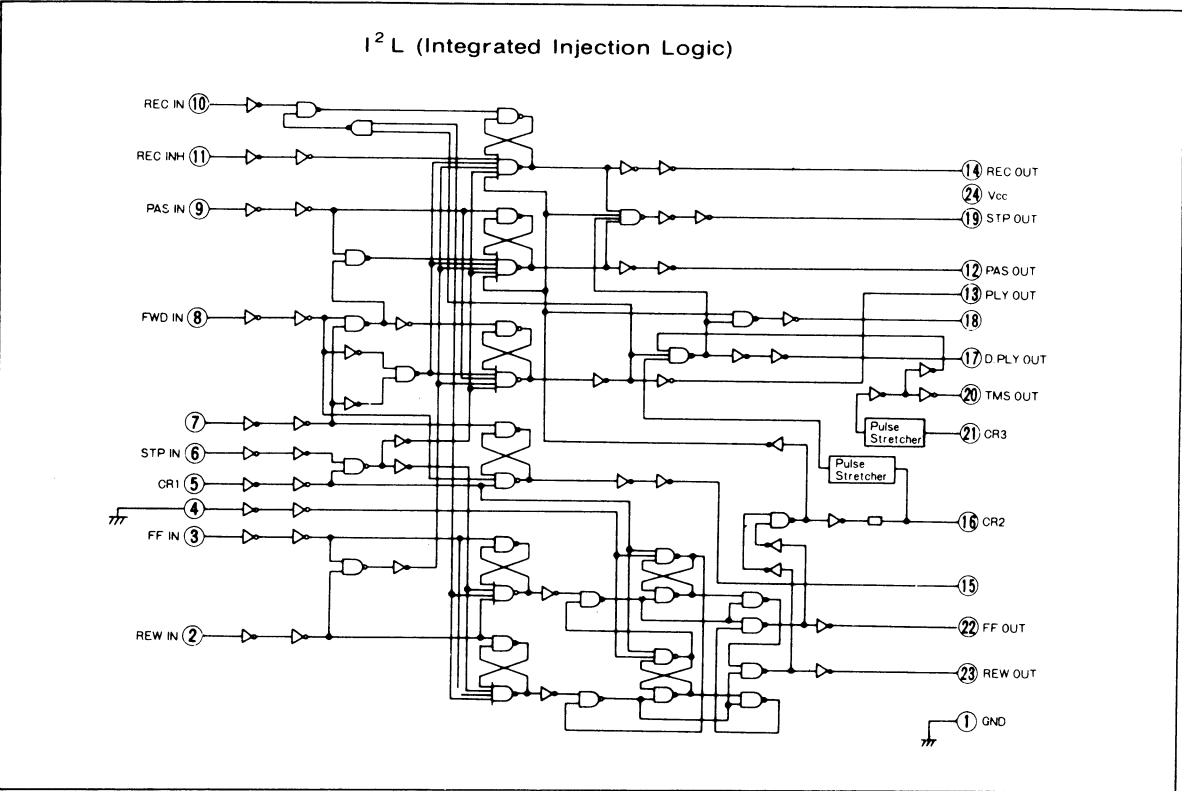


CIRCUIT BOARD

Main Control



IC (AN6251) equivalent circuitry

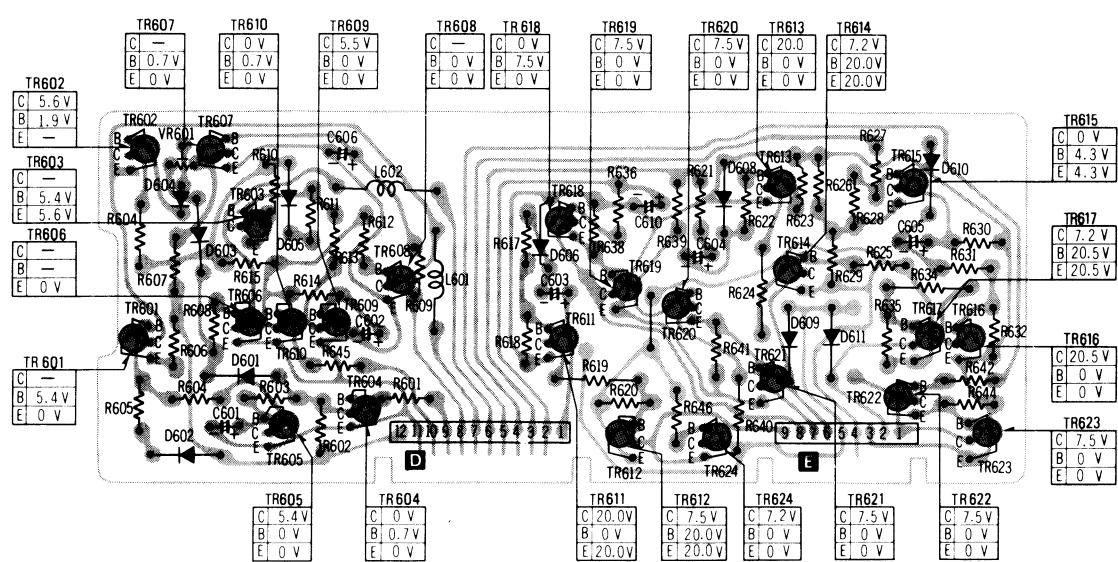


Relationship of each operation mode with input/output

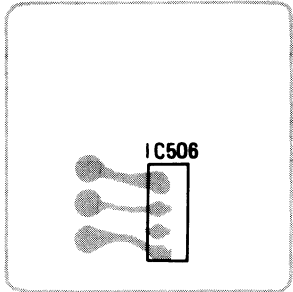
Operation mode	Input terminal	IC (AN6251)							
		Output terminal							
		(12) PAUSE OUT	(13) PLAY OUT	(14) REC OUT	(17) D-PLAY OUT	(19) STOP OUT	(20) TMS OUT	(22) FF OUT	(23) REW OUT
REW	(2) REW IN	H	H	H	H	H	H	H	L
FF	(3) FF IN	H	H	H	H	H	H	L	H
PLAY	(8) FWD IN	H	L	H	* L	H	H	H	H
PAUSE	(9) PAS IN	L	H	H	H	H	H	H	H
REC	(10) REC IN	H	H	L	H	H	H	H	H
STOP	(6) STOP IN	H	H	H	H	L	H	H	H

* Doesn't become "L" immediately even if playback button pushed; becoming "L" after a slight delay.

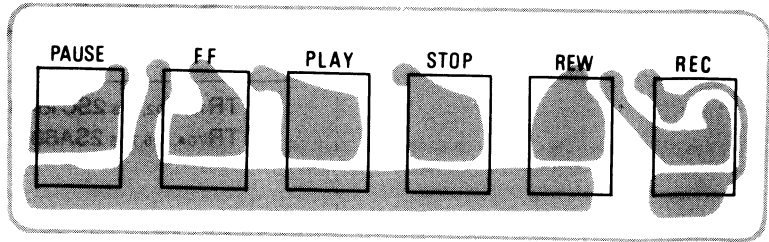
Plunger Driving



Hall IC

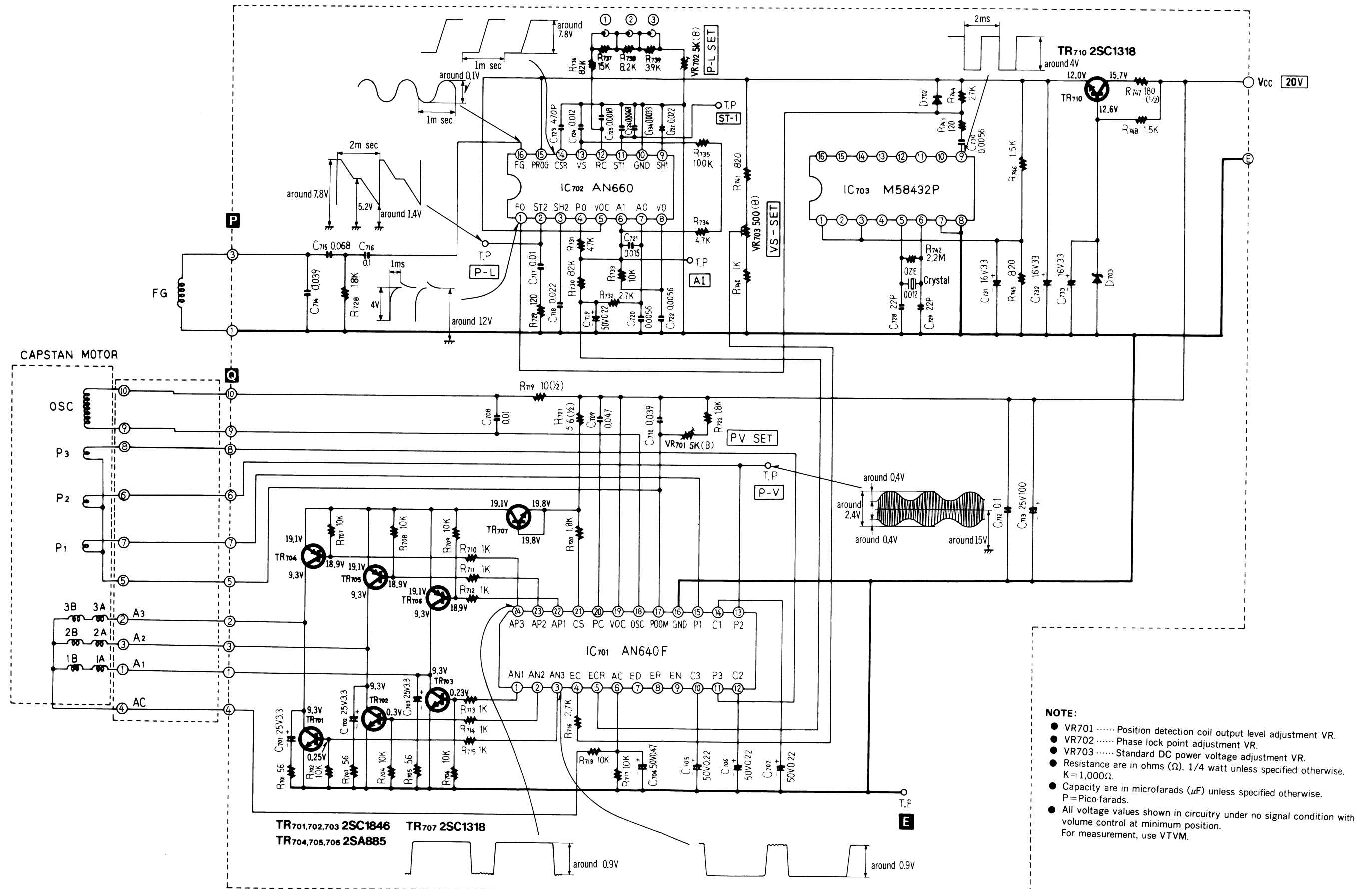


Control Key Switch



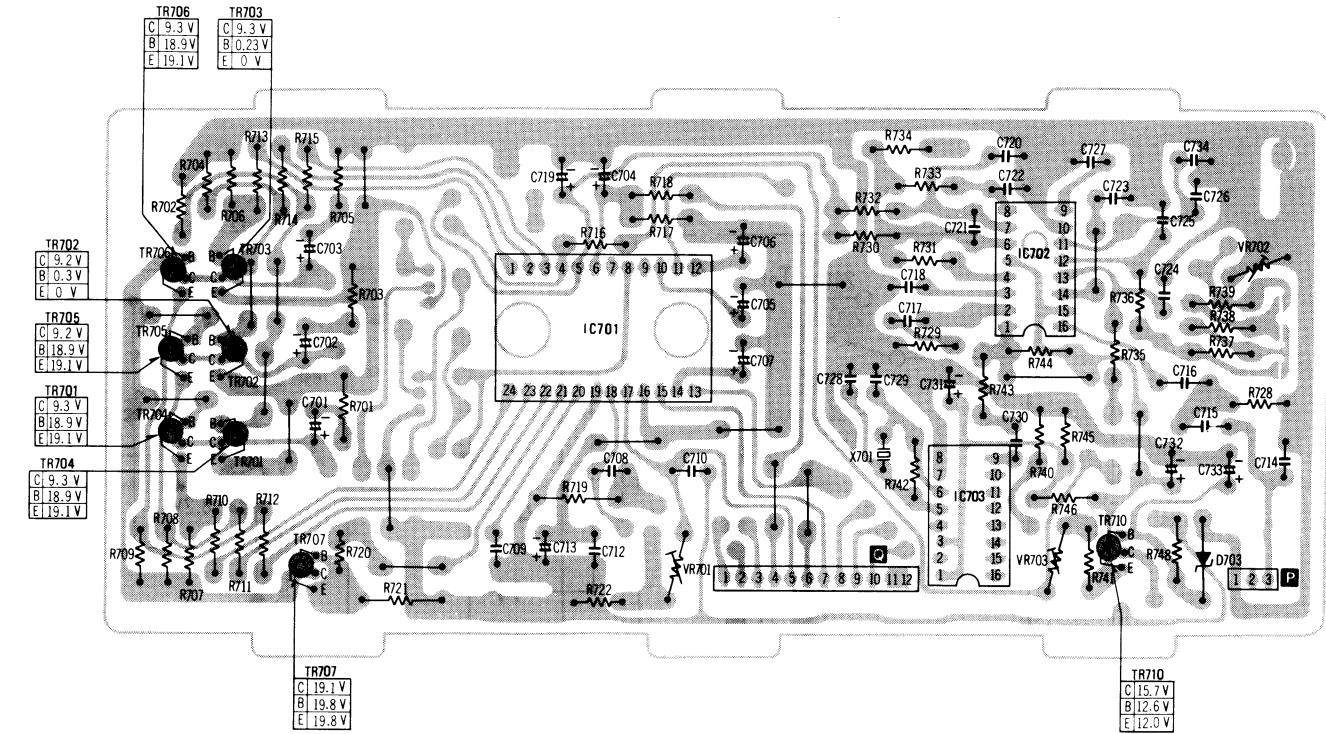
SCHEMATIC DIAGRAM

Capstan Driving Section



CIRCUIT BOARD

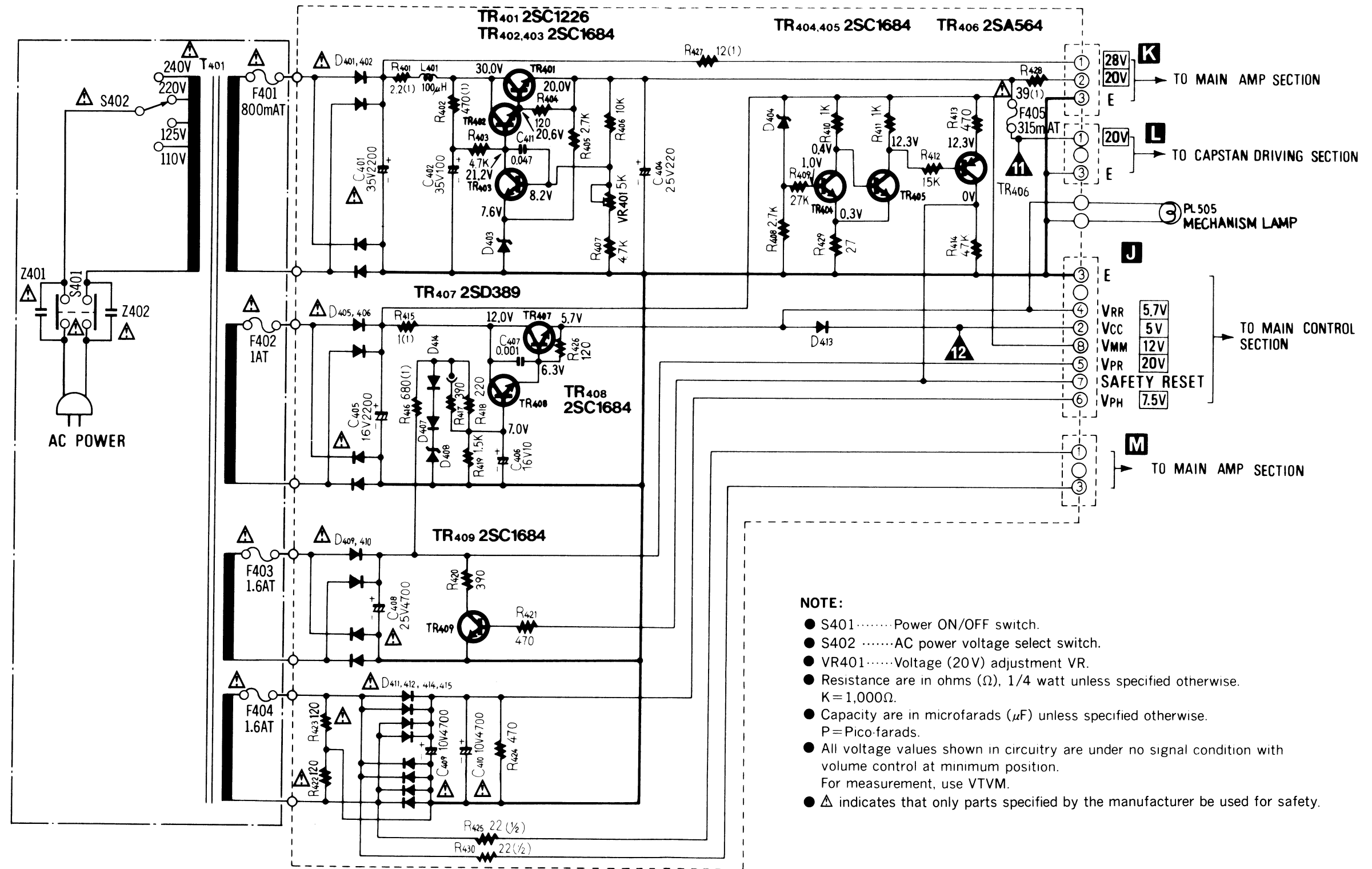
Capstan Driving



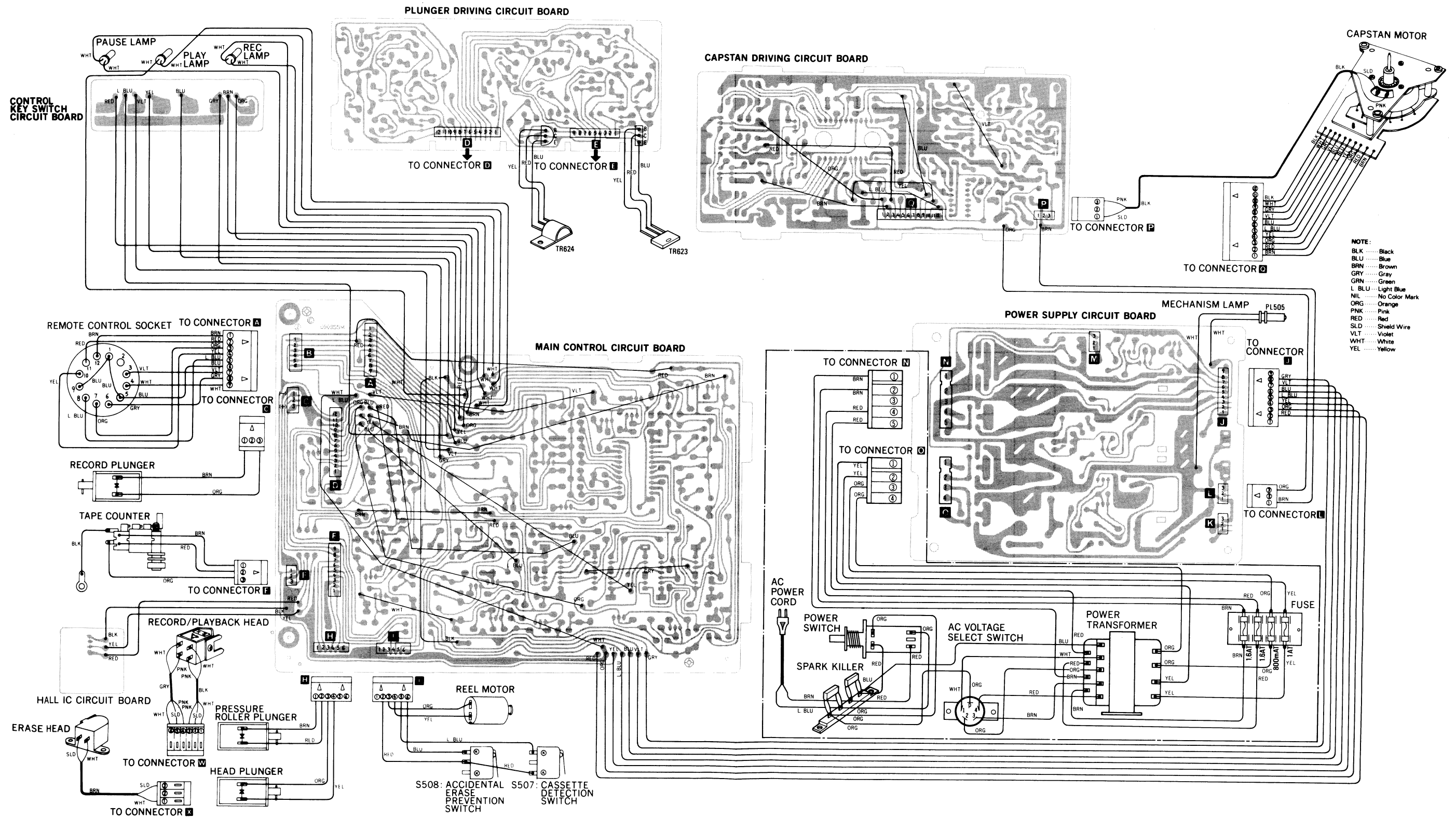
The circuit shown in red on the conductor is B circuit.
Values indicated in are DC voltage between the chassis and electrical parts.

SCHEMATIC DIAGRAM

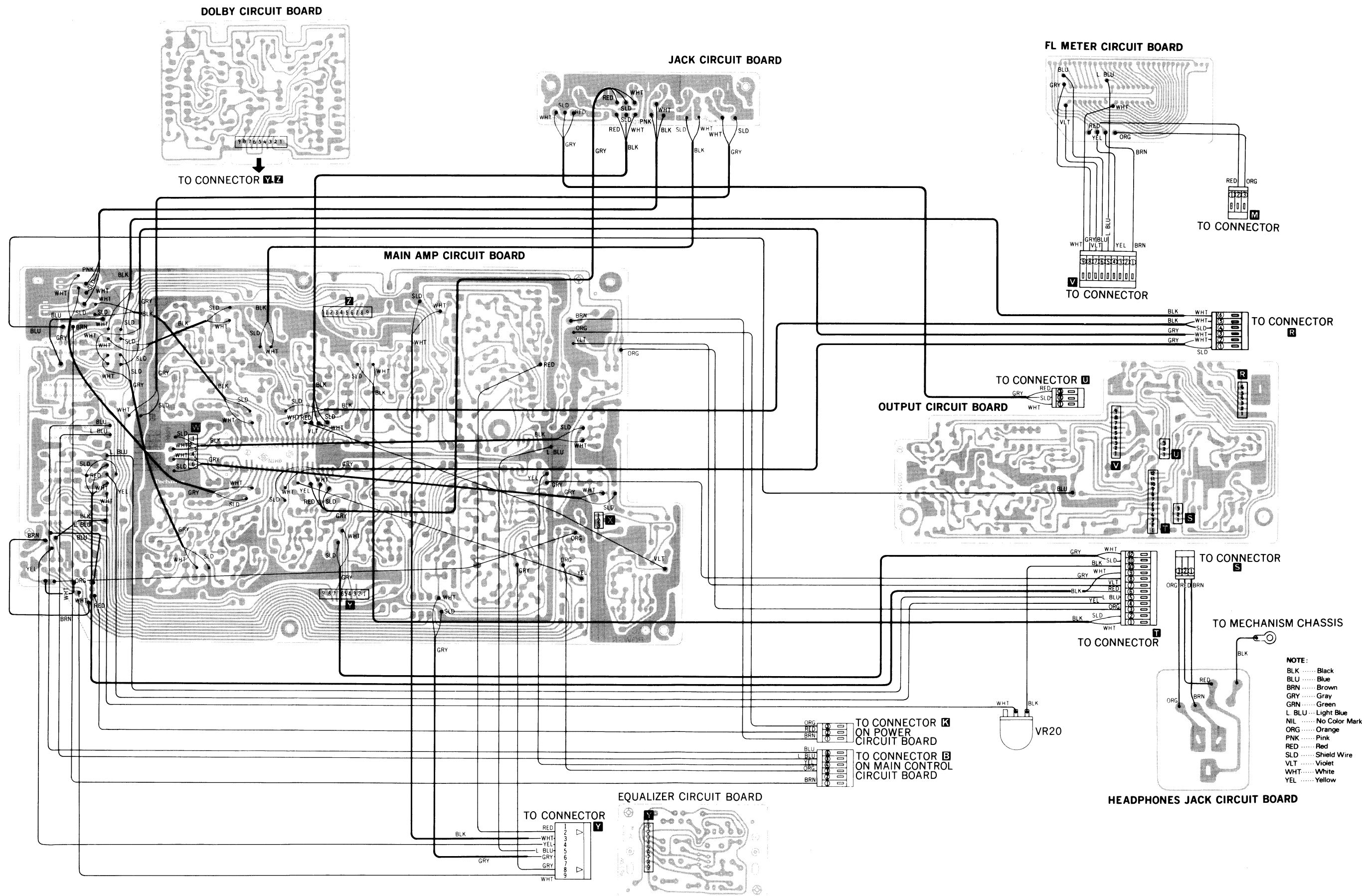
Power Supply Section



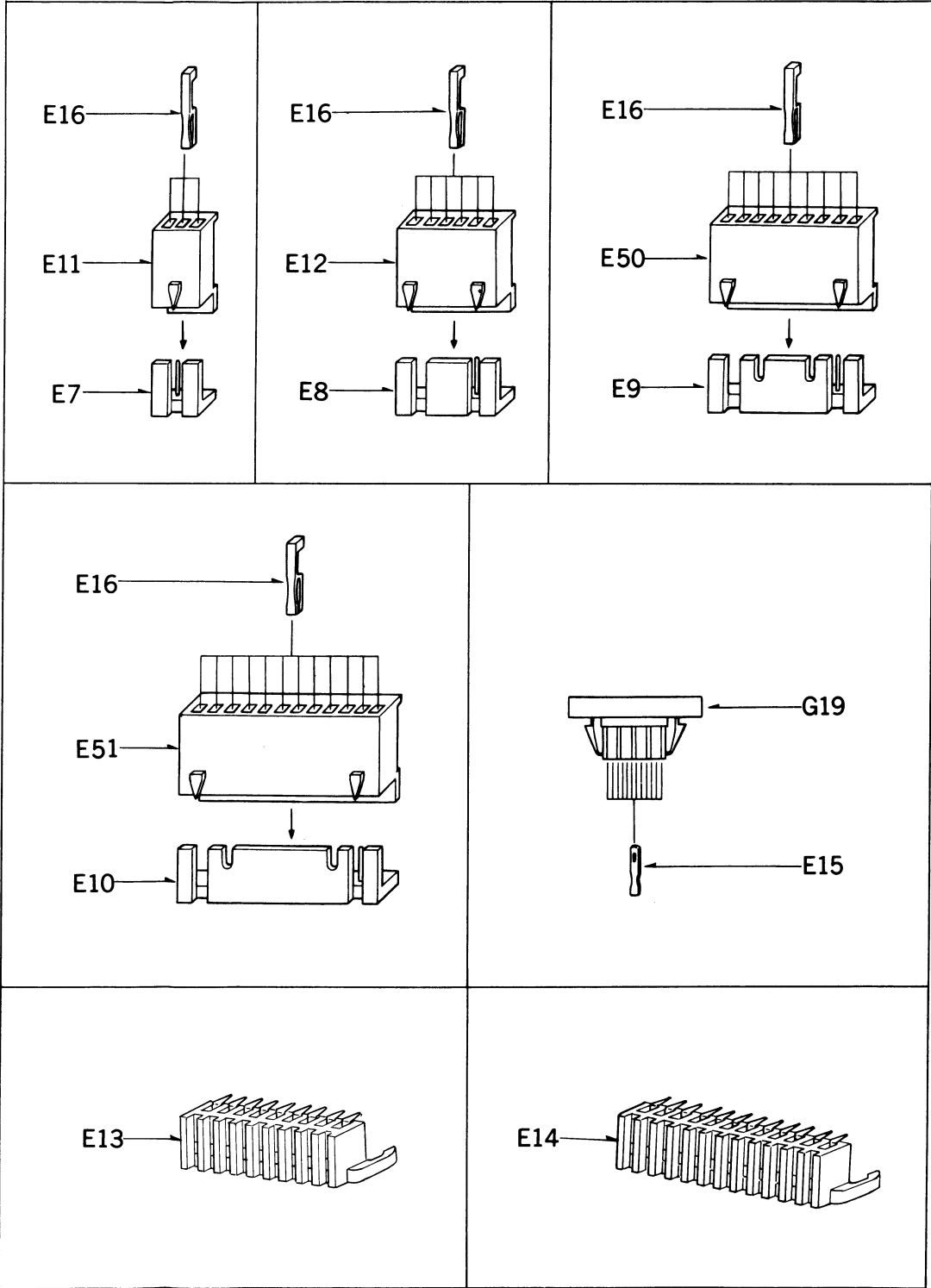
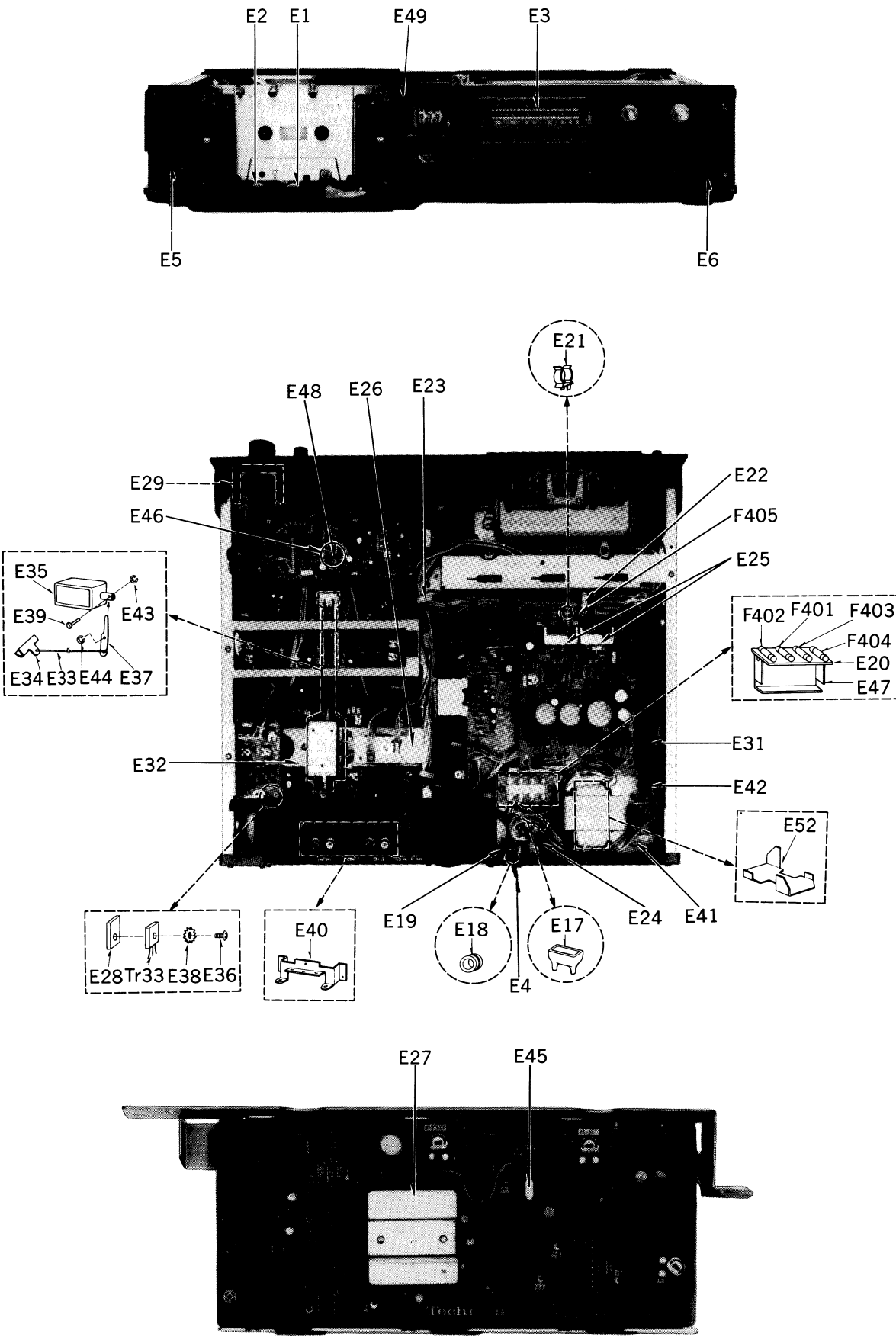
WIRING CONNECTION DIAGRAM



WIRING CONNECTION DIAGRAM



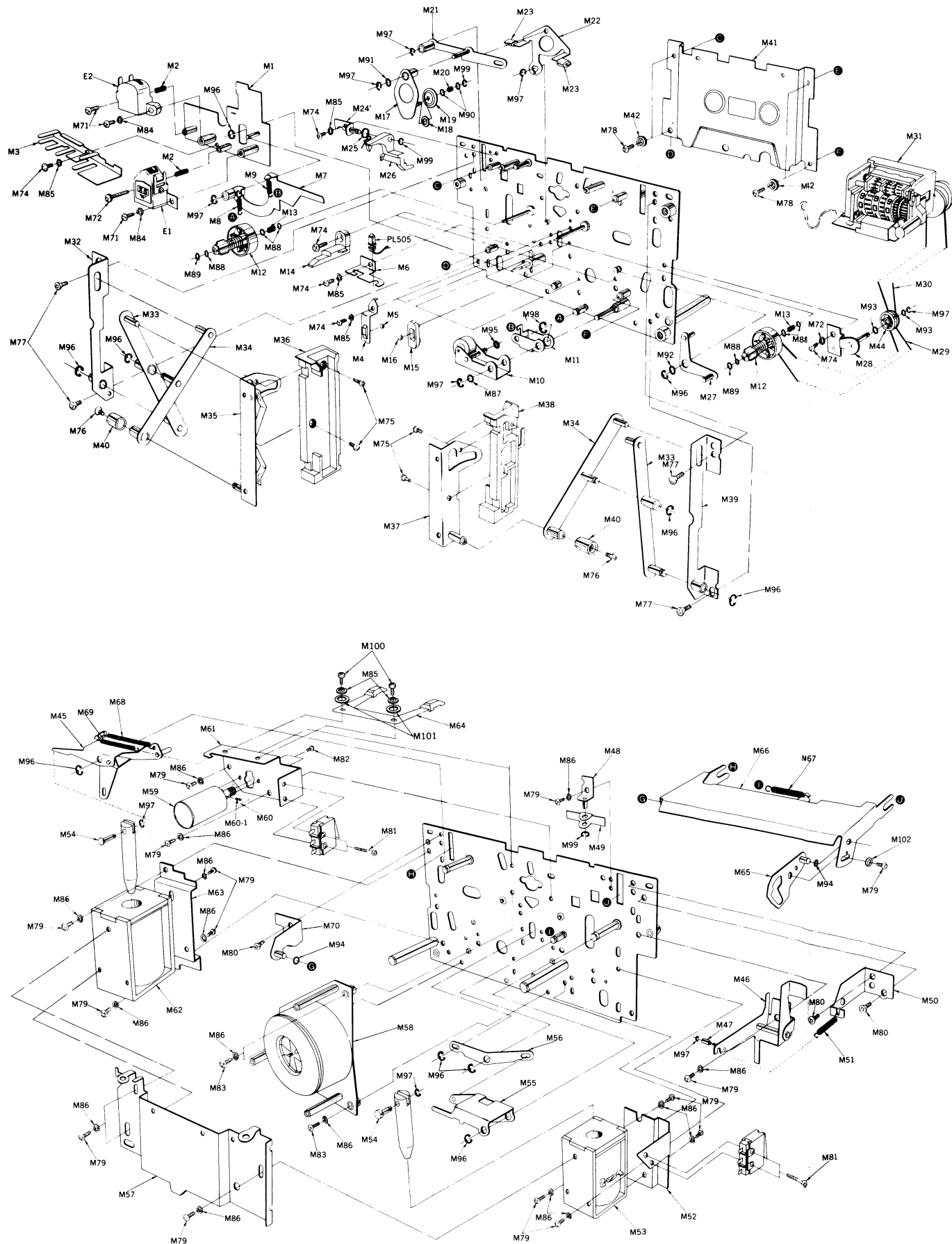
ELECTRICAL PARTS LOCATION



NOTE: Δ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.	Part No.	Part Name & Description
ELECTRICAL PARTS		
E1	WY1402BZ	Record/Playback Head
E2	QWY2133Z	Erase Head
E3	QSL5002RF	Fluorescent Level Meter
E4	QFC1204M	AC Power Cord
*For All European areas except United Kingdom.		
*For United Kingdom.		
E5	QJA0249H	Headphones Jack
E6	QJA0444H	Microphone Jack
E7	QJP1921TN	3 Pin Post
E8	QJP1922TN	6 Pin Post
E9	QJP1923TN	9 Pin Post
E10	QJP1924TN	12 Pin Post
E11	QJS1921TN	3 Pin Socket
E12	QJS1922TN	6 Pin Socket
E13	QJS1923TNL	9 Pin Socket
E14	QJS1924TNL	12 Pin Socket
E15	QJT1053	Contact-A
E16	QJT1054	Contact-B
E17	QTW1118	Spark Killer Cover
E18	Δ QBJ1425	AC Cord Bushing
E19	QTD1164	AC Cord Clamper
E20	Δ QTF1039	Fuse Holder
E21	QTF1054	Fuse Holding Terminal
E22	QTD1244XN	Wire Clamper-S
E23	QTD1250XN	Wire Clamper-L
E24	QJT4017	4 Pin Terminal
E25	QTH1088	Heat Sink
E26	QMF1980	"
E27	QTH1136	"
E28	QTH1118	"
E29	QTS1423	Shield Plate
E31	QXR0385	Power Switch Rod Assembly
E32	"Black Type"	"
E33	QXA0661	Record/Playback Angle Assembly
E34	QBS1116	Record/Playback Rod
E35	QML3283	Record/Playback Lever
E36	QME0141	Record Plunger
E37	XSN26+8	Screw Φ 2.6 \times 8
E38	QML3281	Record Lever
E39	XWC26	Lock Washer
E40	QMN2095	Plunger Pin
E41	QMA3300	Jack Angle
E42	QMA3297	Power Switch Angle
E43	QKJ0242	Cap
E44	XUC25FT	Stop Ring 2.5 ϕ
E45	XUC3FT	Stop Ring 3 ϕ
E46	QZE0012	Crystal
E47	QJT1040	Contact
E48	QMA3404	Fuse Angle
E49	QJT1067	Post
E50	QJT0015	Lug Terminal
E51	QJS1923TN	9 Pin Housing
E52	QMA3296A	Transformer Angle

EXPLODED VIEWS



Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
MECHANICAL PARTS					
M1	QXK2029	Head Base Plate Assembly	M60-1	XXE26D3FZ	Set Screw
M2	QBCA0008	Head Spring	M61	QMA3313	Motor Angle
M3	QTD1261	Head Wires Clamper	M62	QXE0243	Plunger
M4	QBP1733	Steel Ball Holder-A	M63	QMA3312	Plunger Angle-R
M5	QDK1012	Steel Ball 2.5φ	M64	QXH0276	Cassette Holding Cushion
M6	QMA3321	Lamp Angle	M65	QXL1173	Lock Lever Assembly
M7	QXL1168	Pressure Roller Lever Assembly	M66	QML3282	Connector Lever
M8	QBT1490	Eject Lever Spring	M67	QBT1553	Holder Spring-R
M9	QBT1441	Pressure Roller Spring	M68	QBT1405	Lever Spring
M10	QXL1166	Pressure Roller Assembly	M69	QBT1713	Record Spring
M11	QML3267	Pressure Roller Lever-1	M70	QXA0702	Connector Angle-R Assembly
M12	QXD0087	Reel Table	M71	XSN2+6	Screw ⊕2×6
M13	QBC1272	Back Tension Spring	M72	QH01211	Head Adjustment Screw
M14	QMG0054	Cassette Guide	M74	XSN26+4	Screw ⊕2.6×4
M15	QMH2009	Steel Ball Holder-B	M75	XSN26+4BV	Screw ⊕2.6×4
M16	QDK1006	Steel Ball 3φ	M76	XSS2+4	Screw ⊕2×4
M17	QXL1189	Idler Lever Assembly	M77	XSS3+4S	Screw ⊕3×4
M18	QBF1260	Idler Felt	M78	QH01185	Step Screw
M19	QX10101	Idler Assembly	M79	XSN3+5S	Screw ⊕3×5
M20	QBC1308	Idler Spring	M80	XSS3+6S	Screw ⊕3×6
M21	QXL1164	Brake Lever Assembly	M81	QH01182	Step Screw
M22	QML3273	Brake	M82	XSN2+3	Screw ⊕2×3
M23	QBG1132	Stopper Rubber	M83	XSN3+8S	Screw ⊕3×8
M24	QXA0714	Detection Angle Assembly	M84	XWA2B	Spring Washer 2φ
M25	QBN1573	Detection Lever Spring	M85	XWA26B	Spring Washer 2.6φ
M26	QML3285	Detection Lever	M86	XWA3B	Spring Washer 3φ
M27	QXL1172	Lever-A Assembly	M87	QBW2016	Poly Washer
M28	QXA0712	Pulley Angle Assembly	M88	QBW2012	"
M29	QDB0218	Counter Belt-A	M89	QBW2008	"
M30	QDB0234	Counter Belt-B	M90	QBW2015	"
M31	QXC0021	Tape Counter Assembly	M91	QBW2017	"
	"Black Type"		M92	QBW2018	"
	QXC0029	"	M93	QBW2016	"
	"Silver Type"		M94	QBW2019	"
M32	QXA0703	Angle-L Assembly	M95	QBK7123	Fiber Washer
M33	QXL1191	Link Lever-A Assembly	M96	XUC3FT	Stop Ring 3φ
M34	QXL1190	Link Lever-B Assembly	M97	XUC25FT	Stop Ring 2.5φ
M35	QXA0706	Holder Angle-L Assembly	M98	XUC5FT	Stop Ring 5φ
M36	QMH2027	Cassette Holder-L	M99	XUC2FT	Stop Ring 2φ
M37	QXA0705	Holder Angle-R Assembly	M100	XSN26+6	Screw ⊕2.6×6
M38	QMH2028	Cassette Holder-R	M101	XWG26	Flat Washer
M39	QXA0704	Angle-R Assembly	M102	XWC3B	Lock Washer
M40	QKJ0245	Spacer-A			
M41	QXH0286	Mechanism Cover			
M42	QMZ1213	Spacer-B			
M43	QBP1135	Spring Washer			
M44	QDP1753	Connection Pulley			
M45	QXL1165	Lever-B Assembly			
M46	QXL1188	Eject Lever Assembly			
M47	QDP1758	Roller			
M48	QXA0713	Angle Assembly			
M49	QML3284	Release Lever			
M50	QMA3314	Connector Angle			
M51	QBT1753	Playback Lever Spring			
M52	QMA3311	Plunger Angle-L			
M53	QME0141	Plunger			
M54	QMN2095	Plunger Pin			
M55	QXL1171	Plunger Lever-L Assembly			
M56	QML3276	Plunger Lever			
M57	QMA3322	Reinforcement Angle			
M58	QXK2010	Capstan Motor Assembly			
M59	MKCN22AE5	Reel Motor			
M60	QXP0574	Motor Pulley Assembly			

SPECIFICATIONS

Pressure of pressure roller	400±30 gr
Wow and flutter: JIS (Test tape..... QZZCWAT)	Less than 0.04 % (WRMS)